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Area Boards

THE appointments listed in our personal columns to the new Area Boards to supervise the Regions of British Railways—and eventually, perhaps, other undertakings of the British Transport Commission—give some cause for satisfaction. The boards are set up as from tomorrow, January 1, and begin their duties on February 1. Their formation was included in the reorganisation scheme for the railways implementing the Transport Act of 1953 and approved by Parliament last November. The scheme provides that each board shall not exceed a chairman and six other members, all to be approved by the Commission, that at least one member must be a member of the Commission, and that members must have "had wide experience and [are] likely to be conversant with the circumstances and special requirements, in relation to transport" of the area, and that any member may be chairman. It is satisfactory that the procedure for business is to be decided by the boards themselves. Only the Scottish Area board has its full complement of seven. Appointments to complete membership of the other five will be made as occasion arises. The Eastern Area board so far numbers only five, and the others each six members. The weak point of the new appointments is the preponderance of Commission representation, including three chairmen. This, it is officially stated, is a provisional measure, and not one of policy; it is surely better that the chairman should not be a member of the Commission, and that the statutory minimum of one Commission member on each board be not exceeded, so as to allow maximum representation for industry and other outside interests. As to the last, those responsible are to be congratulated on the appointments so far made. The manifold requirements of industry and commerce seem to be well covered. Members with experience as leaders of organised labour represent no single faction, but share a wide experience in these matters. The chairmen of the North Eastern, Southern, and Western Area boards are leaders of industry, and the London Midland Area board includes a former colonial governor. If the further appointments from outside the railways are of equal merit, the boards, despite the disadvantages which we have mentioned on previous occasions, should play a useful part in lending their experience and interpreting the needs of the community to the General Managers of the Regions.

Mr. F. S. Whalley

WITH the retirement of Mr. F. S. Whalley from the boards of the Vulcan Foundry Limited and Robert Stephenson & Hawthorns Limited yet another of the elder statesmen of the industry lays down his office. Mr. Whalley, who relinquished the Chairmanships of both companies in 1951, has until now remained a Director of both boards, and his decision to retire, as a result of ill-health, at this juncture will be a matter of regret to the many who are familiar with the value of his work over a long period. An illustrated biography of Mr. Whalley appears elsewhere in this issue, in which the various stages of his career have been recorded, but it will not be out of place here to expand on one particular phase, namely that period of ten years during which he was President of the Locomotive Manufacturers' Association of Great Britain. This ten years, which ended in 1946, covered one of the most difficult periods in the industry. It included the immediate prewar, the whole of the wartime, and the postwar years, and entirely different factors were raised in each of these three periods. Mr. Whalley has earned a high place in the regard of the locomotive industry, and many will share our hope that he will enjoy a long and happy retirement.

Railway Wages Dispute

THE decision of the National Union of Railwaymen to submit its case to the court of inquiry set up by Sir Walter Monckton, Minister of Labour, to investigate the railway wages dispute shows some change from the uncompromising attitude which the union has maintained recently. There is no sign as yet that the strike called for January 9 will be cancelled, but if the court were to publish recommendations, or even an interim report, before that date in terms favourable to the union, the strike might be postponed. The terms of appointment of the court, over which Sir John Cameron, Q.C., will preside, refer to the trade dispute as arising from a claim by the union for increased wages, but one of the parties, the British Transport Commission, rightly considers that the agreement last October—since repudiated by the N.U.R.—settles the last outstanding claim. The N.U.R. is now determined to insist on the concession of the full 15 per cent wage increase for which it asked in 1953. An investigation is bound to consider the failure to use the existing negotiating machinery, a feature of the dispute which can only harm the cause of N.U.R. members and of all railwaymen involved in claims for improved pay and conditions.

Institute of Transport Annual Report

THE extensive programme arranged by the Council of the Institute of Transport during the year ended September 30 last included a summer meeting in Paris. A residential course on transport was held at Ashridge in September in which the Institute co-operated. A Section for Western Australia, with headquarters at Perth, was

formed during the year and held its first meeting on June 30. Approval was also given for the formation of a Port Elizabeth Section within the Southern Africa Division. There was a small net increase in membership from 9,022 to 9,084. The addition of 699 Students was counterbalanced by a loss of 152 transferred to higher grades and 586 from other causes, and the Council states that the high rate of turn-over in Student membership shows no sign of coming to an end. Expenditure exceeded income by £518, compared with an excess expenditure of £1,470 in 1953-54. At the examinations in May, there were 1,321 candidates, and the names of 702 candidates appeared in the pass lists. Arrangements for the recognition for Institute purposes of the internal examinations of the Dublin Vocational Education Committee resulted in the success of 36 candidates.

Trade with Latin America

SPEAKING at a Press conference recently, after an extended tour of the principal cities of Latin America, Mr. J. P. Ford, Chairman of the Institute of Exports and managing director of three companies responsible for the export sales of the Brush Group Limited, said that the potential development of the Latin American countries was enormous. Deliveries from this country, which had shown an improvement, he said, were now falling off. Britain had been exporting capital equipment to the value of £100,000,000 for some years; this he considered could be stepped up a further £300,000,000 in the next five years, if this country made an all-out effort. He advocated exhibiting at the Bogota and Sao Paulo Fairs, and visits from high officials from firms in this country with powers to make decisions on the spot. British representatives were too thinly spread throughout Latin America, and it would be necessary to offer credits comparable with other competitors, both long-term and short-term credits. Continental firms were making an all-out effort to obtain these markets, and he thought that much more could be done to train engineering students in this country. He cited diesel engines and electrical equipment as being urgently required in Central and South America.

Promoting Indian Tourist Traffic

THE Indian railways, both state and privately owned, long pursued an active commercial policy in their tourist, pilgrim, and other holiday passenger traffic. The six state-owned railways in the Republic of India are continuing active in this respect. Since the war, there has been less emphasis on catering, by tourist cars and other means, for the well-to-do cold weather tourist from overseas, and more on promoting domestic travel, especially in "intermediate" and third class, which traffic, however, was by no means neglected before 1939. The necessity for providing for the upper class passenger still remains, though the air lines and private motoring have made inroads on this traffic. An example of the efforts now being made is a series of round tours based on Bombay, advertised by the Central Railway, on which they begin. One such tour covers a large part of the sub-continent, embracing, besides Calcutta, Madras, Bangalore, and Poona, such Hindu pilgrimage centres as Prayag (Allahabad), Benares, Gaya, Puri, Rameswaram, and Madura, and so back to Bombay—some 4,300 miles for a little over £8 third class, in which class, as we have described recently, the amenities of travel are being greatly increased.

Electric Working over Long Distances

THE through passenger service to start next May between Paris and Syracuse, some 1,450 miles, in 37 hr., will afford the longest continuous electrically-hauled journey in the world, 1,330 miles from Paris via Dijon, Macon, Bourg, Modane, Turin, Rome, and Naples to Villa San Giovanni, the mainland terminal of the Straits of Messina train ferry; this compares with the present longest through journey by electric train, from Stockholm to Narvik, 980 miles, in about 25 hr. Electric traction from Paris to the Straits of Messina will be made possible by the electrification of the Macon-Bourg line of the French National Railways. Whether the number of through passengers between Paris and Sicily will justify through coaches is problematical—the vehicles will be transferred at Rome between Paris-Rome and Rome-Sicily expresses—but the new service should afford much useful publicity. Electrification is in progress between Messina and Palermo, 145 miles, and its completion will afford a through journey with electric haulage—excluding the train ferry—of 1,475 miles from Paris to the capital of Sicily.

A Protracted French Railway Scheme

IN France, the Government decided from the outset where the principal railway routes should run and carried out the civil engineering works itself, leaving concessionary companies to provide the working equipment and to operate the lines. Sections of railway strategically or otherwise desirable in the national interest but with unattractive commercial traffic prospects were either guaranteed or worked directly by the State. By 1878, the State was also operating a group of lines in an area bounded by Chartres, Nantes, and Bordeaux, enclosed by the Western and Paris-Orleans Railways, with which they competed, and lacking access to Paris. The Freycinet Plan drawn up after the war of 1870 included a new line from near Chartres to Paris intended to give the State Railway lines an independent route to the capital. Even though after 1887 the State Railway exercised running powers over the Western Railway from Chartres through Versailles to Paris-Montparnasse, a separate line via Gallardon was still favoured, and an amended route was surveyed.

A Superfluous Project—Continued

NOT until 1902 was the Gallardon route authorised and by then it was seen that, traversing a thinly populated agricultural country on a course parallel to other lines, it could not hope to attract much traffic. The Government decision to take over the Western Railway as from January 1, 1909, changed the situation. Little work had been carried out by that time on the line, but there seemed to be a reluctance to abandon the scheme. Some construction was carried out by the enlarged State Railway in 1910, and later a wide roadbed was constructed for some distance out of Paris. By 1930, a single line was worked between Chartres and Massy-Palaiseau, but at a loss. The electrification of the Montparnasse—Chartres main line and widening works out to Versailles undertaken in the 1930s, made the scheme more than ever superfluous. In 1944 three of the viaducts were destroyed by military action and in 1945 lifting of the track so far laid was authorised, except between Gallardon and Chartres, where the line continues in use for goods traffic. Finally, in 1953, Parliament declared the line abandoned, thus ending a project three-quarters of a century old.

Translating Signalling Terms

IT is often very hard to arrive at a good translation of a railway expression, a problem to which the International Union of Railways is giving special attention, and in no field, perhaps, does this so frequently occur as in signalling. There are several reasons for this and the result has been that in many cases the foreign expression has been taken into another language as it stands, no satisfactory equivalent having been discovered. The English word "slot" is used in many Continental countries although it has lost its justification in Britain, for the apparatus now used here does not embody the feature that gave rise to it. Attempts have been made, so far without much success, to arrive at a handy German equivalent for "relay," and the French form *relais* continues to be widely used in German documents. A recent issue of the official Swedish State Railways journal *SJ Nytt* raises the question of finding a rendering for the widely used American term "centralised traffic control," generally shortened to C.T.C., stipulating that it shall be simple and short and yet convey clearly the idea of remote control.

Securing the Closed Switch Tongue

THE question of locking and later of detecting facing points early became the subject of discussion and invention among railway engineers and signal manufacturers. Some of those prominent in the first days of railway development felt a great mistrust of facing points and would do almost anything to avoid using them although at some locations that was impossible. This feeling was reflected for some time in the official requirements governing new and altered lines and was justified, for at one time facing points figured with unpleasant frequency in accident investigations. Eventually in Great Britain and where British influence extended the central plunger bolt introduced by Saxby in 1870 became the standard device, although Harrison's wedge lock enjoyed a certain vogue for a time, but on the Continent designs involving the principle of clamping the closed point tongue to the stock rail came to enjoy great favour. Such an arrangement is now standard on the S.N.C.F. and, as described on another page, a trial is being made with it at Earls Court, on the District Line of London Transport, with electro-pneumatic actuation, an item of great interest to signal engineers in this country.

Leading Axleloads

WHILE the general trend in electric locomotive design is towards the total adhesion type, some civil engineers are still dubious about the wear of curved track by bogies with motored leading axles. Diesel-electric practice more often uses a bogie with one idle axle, as in the Southern Region 1,760 and 2,000 h.p. locomotives, in which the outer axles carry between 12 tons 16 cwt. and 11 tons 5 cwt., compared with some 18 tons on the driving axles. In the recent 1,500 h.p. English Electric diesel-electric locomotives for New Zealand each three-axle motor bogie incorporates a two-axle guiding bogie, and the maximum axleload on the driving axles is 11¼ tons. In this design the limitation of axle loading was primarily in the interests of maximum route availability. A similar arrangement of guiding axles forming a sub-bogie has been adopted in the North British—G.E.C. "4E" class electric locomotives for the South African Railways, although here there is only a single guiding axle pivoted from each main bogie. The formation of the new trains for the Southend and Chelmsford electrification will also avoid motored axles on the front in either direction of running. On the Continent, however, motored leading axles carrying nearly 20 tons are used in high-speed electric locomotives, although with springborne motors and often a linkage between bogies to control their alignment on curves.

Increasing South African Carrying Capacity

EMERGENCY measures expected to cost at least £10,000,000 are being undertaken by the South African Railways. Addressing the Association of Chambers of Commerce in Cape Town recently, Mr. D. H. C. du Plessis, General Manager of the S.A.R., said it was hoped these measures would ease the transport situation during the difficult winter months next year. During the present financial year more than £1,000,000 will be spent on the schemes which were devised as a short-term relief to pressure on the railways. Some of the works, said Mr. du Plessis, would be expensive and others would mean financial loss, but at the present time profit-making could not be the deciding factor.

To ease the accumulation of goods, a fleet of 10-ton lorries able to haul 5-ton trailers has been posted to strategic points to provide relief services at the usual railway tariffs where wagons are not immediately available. Mr. du Plessis said that in recent months the railways had not been able to cope with all the freight offered for transport, especially goods like chrome, manganese ore and coal, and that there had been delays in the delivery to farmers of fertiliser and power paraffin. This, however, should not be regarded as an admission of failure, even less as proof that advance planning had been inadequate in relation to the phenomenal economic growth which South Africa had experienced since the war. It should be remembered that for every ton of coal, chrome or manganese which could not be transported, the railways carried a great volume of consumer goods, such as manufactured goods, perishable goods, maize and iron ore.

To illustrate the Union's recent economic progress, Mr. du Plessis pointed out that the national income in 1953 alone compared with 1952 had increased by 8·2 per cent. In the five years from 1946-50, the total number of workers employed in industries had increased from 519,000 to 713,000, the value of machinery had increased by nearly 100 per cent and the gross value of production from £417,400,000 to £774,700,000. These increases, with the spectacular development of the mines and agriculture, meant a severe test for the railways.

The railways, continued Mr. du Plessis, could not have done more than they had in the past ten years. They had spent £280,000,000 on improvement schemes and the replacement of obsolete equipment. In addition, the development and expansion of South Africa's economy had not only outgrown the capacity of the railways, but all public services including postal and telephone services, services provided by local authorities, hospitals, and even the provision of power were strained to the utmost, proof that the Union's financial, labour and other resources had been unable to keep pace with the economic development of the country.

A recent analysis has shown that on the basis of traffic now offering, without allowing for future expansion, the railways will have to improve their carrying capacity by at least 8 per cent to meet existing demands. One of the most important new relief works is a line which will avoid Johannesburg and directly link the coalfields of the North with the main line to the Cape and is planned to carry 1,000,000 tons of traffic a month. The Johannesburg-Bloemfontein main line is to be doubled between Vereeniging, in the Transvaal, and Kroonstad, in the Orange Free State. The work, which will cost £4,000,000, will complete double track throughout between Johannesburg and Bloemfontein, a distance of 263 miles; this will be the longest section of double track by far on the South African Railways.

Inherent Advantages of Railway Service

THE United States Transportation Act, 1940, declares the national transportation policy of the U.S.A. to be to provide for fair and impartial regulation of all modes of transportation, so administered as to recognise and preserve the inherent advantages of each. A competition held in the U.S.A. some months ago under the auspices of our contemporary *Railway Age* produced many essays on inherent advantages of railway service. Some of these have been reprinted as a pamphlet with an additional article by Dr. G. Lloyd Wilson, Professor of Transportation & Public Utilities, University of Pennsylvania, which summarises the whole question.

The similarity of the problems facing British and American railways is evident from this pamphlet, as is the extent to which legislation affecting railways in both countries has followed similar lines. The freedom of charging afforded to British Railways by the Transport Act of 1953 is evidently also sought in the U.S.A. The authors agree that the railways should be permitted and encouraged to make truly competitive rates. They also agree that the outstanding inherent advantage of railway service is its ability to carry large quantities of freight at low cost and with decreasing costs per unit until maximum capacity is reached.

The pamphlet states that the average charge for railway service in the U.S.A., some 1·5 cents per ton-mile, is considerably lower than the minimum cost per ton-mile ever achieved by road transport. Despite this, the railways are not carrying all the traffic for which they have a cost advantage and, conversely, are carrying some traffic which could be moved at lower cost by other agencies.

Dr. Lloyd Wilson, in his summary, declares that the rail-

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ways, as a decreasing cost industry, can and should price their services so as to maximise the volume of traffic up to the practicable limits of operating capacity. Costs per unit do not increase as rapidly as does the revenue per unit; therefore the spread between costs and revenues will produce the maximum aggregate net revenue. If this process is to be carried out, railways must determine the elasticity of demand for their various services. The railways, he says, must recognise and preserve this economic advantage of economies of scale and decreasing costs. He points out that railways can handle larger quantities of goods in wagons without corresponding unit increases in cost. The ratio of payload to costs improves as the wagon load approaches capacity. The conclusion he draws is that railways should charge lower unit rates to induce an increase in the weight of goods per wagon or number of passengers per coach. Rates need not, he thinks, be scaled down in direct proportion to the increase in loadability, but should fall at a slower rate which would cause revenue per wagon to increase.

If railways are to have freedom to make rates within the limits of "out-of-pocket" costs and "what the traffic will bear" they must know what the out-of-pocket costs of moving a consignment are. Dr. Lloyd Wilson defines out-of-pocket costs as the short run costs of a carrier with a given plant capacity for a period of time during which there is no alteration in plant facilities or capacity. They are not, he insists, marginal costs, which are the added or additional costs per successive unit of traffic. Differences in railway rates are held to be justifiable where there are differences in the character of the services provided. Railways should charge, and be allowed to charge, rates giving effect to these variations and he maintains that failure to do so creates unjust and unreasonable discrimination.

The suggestions summarised above show that the trend of opinion in the U.S.A., starting from different conditions from those experienced in this country, has moved to much the same position as has been reached here. The principles of costing, loadability, and traffic flow have all been in the mind of the British Transport Commission in the last few years, and will be reflected in due course, presumably in its rates.

Kowloon-Canton Railway

THE report of the Kowloon-Canton Railway (British Section) for the year ended March 31, 1954, which has been received from Mr. I. B. Trevor, General Manager, shows that there was a considerable increase in passenger traffic with China after a relaxation in the issue of travel permits in April, 1953. The travel regulations were tightened up again in November. Non-local passenger journeys rose from 344,692 in the previous year to 657,289, an increase of 90·69 per cent; revenue from this source increased from $461,314 to $903,411, or 95·83 per cent. Local passenger traffic continues to improve as families move out of the town to the villages. Total passenger receipts increased from $3,031,140 in 1952-53 to $3,585,311.

Goods exported from the Colony fell from 33,728 to 23,826 tons, or 29·36 per cent, and revenue fell from $394,863 to $278,051, 29·58 per cent. The embargo on strategic supplies to China was responsible. Similarly, goods imported were adversely affected. The tonnage declined from 220,287 to 139,973, a fall of 36·46 per cent, and receipts from $1,340,910 to $904,800, or 32·52 per cent. Total goods receipts fell from $2,223,443 to $1,552,906, and tonnage from 264,602 to 174,720. Railway operating revenue was $5,403,068, compared with $5,514,904 in the previous year, but a reduction in operating expenditure increased the net operating revenue from $1,360,969 to $1,440,537. Gross railway receipts were $5,447,846, a reduction of $646,316 on 1952-53.

Train punctuality has improved, 64·74 per cent being on time and 29·46 less than five minutes late. The new practice of searching trains on the move for unauthorised persons trying to enter the prohibited border area, instead of holding trains for this purpose at Fanling, has helped to achieve this result. There was a saving in locomotive running expenses of $288,000 attributable to a reduction in the cost of fuel oil which made it more economical to burn oil than coal. Steel water space stays on the 2-8-0 "austerity" locomotives still gave trouble and as a precautionary measure all boilers so fitted were given a hydrostatic pressure test every six months instead of annually.

For the first time since the war it was possible to obtain hardwood sleepers from Australia at a figure of $32·30 each, a price competitive with the creosoted semi-hardwoods from Malaya bought in the previous year. The Australian eucalypts need no creosoting and have proved the most durable of any timbers used on the line.

October-November Traffic Trends

IN normal conditions, British Railways should be able to count on originating a large tonnage of freight train traffic in the four-week period from October 11 to November 7. In the last quarter of 1954, conditions were especially favourable. Steel and pig iron were produced in record quantities and most of the staple industries were so active that the National Coal Board could not win sufficient coal to meet the country's needs. Rail carryings were the largest for any four-week period in 1954, but No. 11 of *Transport Statistics* shows that the tonnage of 23,168,000 was 630,000 tons below 1953, or 2·6 per cent. Merchandise accounted for 322,000 tons of the decrease, bringing the total loss of high-rated goods in 44 weeks to 1,475,000 tons (3·6 per cent). Since January, the decline affected all Regions, varying in degree from 125,000 tons in the Eastern (2·2 per cent) to 284,000 tons in the Southern (10·7 per cent) and 348,000 tons in the London Midland (2·9 per cent) up to November 7. To judge by merchandise and livestock receipts, the downward trend will continue to the end of the year, though at a reduced rate.

The volume of mineral traffic diminished, in Period 11, by 274,000 tons (5·2 per cent). It fluctuated irregularly during the year, causing a total loss during 44 weeks of 1,805,000 tons (3·3 per cent), which was spread over all Regions in amounts varying from 18,000 tons in the Scottish Region (0·3 per cent) to 415,000 tons in the Western (5·2 per cent) and 766,000 tons in the London Midland (4·1 per cent). After improving by 4,490,000 tons in 1953, coal and coke forwardings tend to slip back. A decrease of 18,000 tons in the four weeks to November 7 is small compared with a loss of 65,000 tons (11·6 per cent) on Inland Waterways. Over 44 weeks British Railways had a decrease of 81,000 tons (0·1 per cent), while Inland Waterways moved 421,000 tons less (7·2 per cent).

British Railways worked 37,873,000 fewer ton-miles in Period 11, a decrease of 2 per cent. Merchandise ton miles alone were down 32,095,000 (5·8 per cent). The only Region to have a larger traffic movement was the Eastern, which worked 11,078,000 more ton miles, chiefly with minerals. Over 44 weeks British Railways ton mileage was 2·2 per cent less. The Eastern Region worked 35,095,000 additional ton-miles (0·9 per cent) with minerals and coal, while the North Eastern had a small increase of 33,000 through a heavier coal movement. The other Regions had considerably less movement to perform.

Passenger Traffic

In the month of September passenger journeys on British Railways numbered 98,809,000, an increase of 2,673,000 on 1953 (2·8 per cent). That was the first time since March that the monthly volume of travel was larger, but the average fare paid was only 26·4d. against 33·8d. in August and 42·7d. in July. Most of the additional journeys were made by holders of excursion or season tickets. The London Midland Region issued 1,280,000 more cheap tickets, a rise of 23·5 per cent. Season ticket journeys were up 1,876,000, or 12·5 per cent, in the Southern Region and 563,000 in the Eastern (11 per cent). The September figure brought the total number of journeys in 1954 to 756,140,000, a small increase of 276,000 on the corresponding period of 1953.

First class accommodation was patronised better in

September, bookings numbering 1,926,000, an increase of 40,000 (2·1 per cent). The average receipt of about 130d. was the lowest in any month since January. In the nine months to September 14,792,000 people travelled first class, 145,000, or one per cent, more than in 1953. The corresponding receipts were 3·7 per cent higher; the average fare rose from 137d. to 141d. but was well below the average of round about 159d. for the three months from May to July.

London Transport

In the four weeks to November 7, London Transport carried 49,543,000 passengers by rail, the largest number for any period in 1954 and 3,861,000, or 8·5 per cent, above 1953. Its road services carried 240,755,000 passengers, 37,273,000 fewer than a year ago (13·4 per cent). This is the third consecutive period in which rail traffic has increased and road traffic has declined, but rail carryings for 44 weeks to November 7 were still 6,541,000, or 1·3 per cent, below 1953. As road services lost 101,819,000 passengers over these weeks, the aggregate carryings of 3,475,755,000 were down 108,360,000, or 3 per cent.

Road Passenger Transport

The experience of Road Passenger Transport (Provincial & Scottish), in Period 11 differed entirely from the downward trend in London Transport results. The Tilling Group did well to carry 1,119,000 more passengers than in 1953, an increase of 0·9 per cent, but the Scottish Group secured 1,833,000 additional journeys, a substantial rise of 3 per cent. During the 44 weeks to November 7, the combined carryings of the Groups numbered 2,027,248,000, representing 20,731,000 extra journeys—of which 12,561,000 fell to the credit of the Scottish Group. The average receipt per journey was 5·25d. for the Tilling Group and 5·05d. for the Scottish, compared with London Transport average fare of 3·44d., and total receipts of the two Groups exceeded the takings of L.T. road services by 2 per cent on November 7.

Improvements on the Central Railway of Brazil

THE programme of improvements on the 5-ft. 3-in. gauge main lines of the Central Railway of Brazil recommended by the Brazil-United States Commission and approved by the late President Vargas is most comprehensive. It includes extension of electrification, relaying of track and realignment, construction of depots and repair shops, and provision of new goods stock and motive power.

The trunk route from Rio de Janeiro forks at Barra do Pirai (68 miles), one link running to Sao Paulo (312 miles), the other to Belo Horizonte (406 miles). As far as Japeri, 39 miles, the line runs at an average of 100 ft. above sea level; it then rises on gradients averaging 1 in 60 to 1,464 ft. at Humberto Antunes, and drops to Barra do Pirai, 1,170 ft. This section is quadruple-track to Deodoro and double-track beyond. From Barra do Pirai to Sao Paulo the line is single-track, rising by easy gradients to 2,397 ft. at Sao Paulo. The Belo Horizonte section is also single-track, rising to 3,868 ft. at Ibate and descending to 2,743 ft. at Belo Horizonte; its maximum gradient is 1 in 66.

The improvements are divided into five projects: Central A, B, C, D, and E. In the first, extensions totalling 15 miles will be made to 11 loops between Belo Horizonte and the mining centre of Lafaiete; they will permit the running of trains of 44 wagons, instead of 18 at present. This single-track section carries a heavy and increasing traffic of iron ore for the National Steelworks at Volta Redonda and for other steel plants in the Paraiba Valley and Sao Paulo, as well as of manganese for export. The yards at Lafaiete will also be enlarged. Central B plan provides for general improvements to running lines between Rio and Sao Paulo, and Rio and Belo Horizonte. It includes the replacement of 389,000 worn-out sleepers, laying 891,000 additional sleepers to re-space in the proportion of 2,080 to the km., instead of 1,365 at present; substitution for the existing 85 lb. and 100 lb. rails of 115 lb. rail over 400 miles; ballasting and sub-ballasting over 625 miles; purchase of materials for line maintenance.

Construction and equipping of repair shops for diesel-electric locomotives at Barra do Pirai, to reduce from 20 to ten the percentage normally laid up for repairs form Central C project. The erection of a terminal freight station at Arara, Rio de Janeiro, with sufficient capacity to handle cargo speedily to and from the port is the next project. In Project E some 2,075 wooden wagons will be replaced by 1,500 steel wagons with greater carrying capacity, and 765 additional wagons will be acquired. The table below shows the estimated cost under each head:—

Project	Material imported	Brazilian labour and materials
	U.S. $	Cruzeiros
A	62,294	18,092,841 (£361,857)
B	1,531,357	652,278,000 (£13,045,560)
C	427,700	20,000,000 (£400,000)
D	90,000	13,229,300 (£264,586)
E	8,675,280	370,570,874 (£7,411,417)

Independently of this programme, the Central Railway has been carrying out extensive works since 1951 to improve operating conditions and increase traffic capacity. On the Rio-Sao Paulo line deviations are being made to lessen gradients and curves. When the works are completed, 1,500 h.p. diesel-electric locomotives of the 3,200 series will be able to haul trains of 1,800 tons, instead of 1,200 tons at present, and Mikado steam locomotives trains of up to 1,750 instead of 1,040 tons. Carrying capacity is expected to increase by 20 per cent and operating costs should drop 57 per cent. The journey time between Rio and Sao Paulo has been cut already from 12 hr. to 10 hr. C.t.c. is being installed between Japeri and Barra do Pirai, and electrification extended from Barra do Pirai to Volta Redonda.

In 1951 contracts were signed with the Baldwin-Lima-Hamilton Locomotive Corporation and Montreal Locomotive Works Limited, for 60 broad-gauge and 60 metre-gauge diesel-electric locomotives, to be delivered between August, 1952, and December, 1954. The cost was U.S. $25,000,000; the initial payment ten per cent, with balance to be paid within five years with interest at 4½ per cent. The use of 1,650 h.p. diesel-electric locomotives between Belo Horizonte and Lafaiete will allow trains of 40 ore wagons and 60-70 general freight wagons to be operated once the deviations have been completed.

In March, 1954, the President approved another project by the Mixed Commission to reconstruct the main line between Joaquim Murtinho and Belo Horizonte, 80 miles, and mix the gauge. This project also provides for substituting 90 lb. rails for the existing 60 lb. rails between Esperança and Sete Lagoas (95 miles); relaying and re-spacing sleepers and re-ballasting; and the purchase of 880 wagons. The estimated cost, for imports, is U.S. $1,763,000, and in cruzeiros 588,413,000 (£11,768,260). A decree of August last declares the construction of the "Principal Southern Trunk" to be of high priority in the national interest. This line will link the Central and Sorocobana railways with the Parana-Santa Catarina and Rio Grande do Sul systems and speed transport and distribution of foodstuffs between producing centres in the South and consumers in Central Brazil. The new line, of 5-ft. 3-in. gauge, is being built by army engineers.

By the end of April last, the improvements to the permanent way between Barra do Pirai and Paraiba do Sul, and between Nova Iguaçu and Japeri, the new tunnels and extensive re-alignments between Barra Mansa and Cachoeira, and the shunting yards and deviations between Barra do Pirai and Volta Redonda had all been completed. Good progress has been made with the permanent way improvements on the sections approaching Rio and Sao Paulo and with the replacement of 80 lb. by 115 lb. rails on the Paraopeba line, over the Serra de Mantequeira section, and in the neighbourhood of Juiz de Fora. Alterations to the Roosevelt Yard at Sao Paulo have been completed and electrification of the section thence to Mogi das Cruzes is advanced. The overhead has been extended to Saudade, beyond Barra Mansa, and the electrification

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of the Barra do Pirai-Tres Rio section is being examined. Contracts have been signed for the supply of 1,948 broad-gauge steel wagons, and the purchase of more powerful electric locomotives to haul traffic over the Serra do Mar and the Barra do Pirai-Saudade sections is now being examined. One of the most important of recent improvements was the extension of the Central metre-gauge line from the centre of the State of Minas Geraes to the frontier of Bahia, where it connects with the Leste Brasileira system, thus completing the through route from northern to southern Brazil. The metre-gauge lines are being extended from Pirapora and Paracutu, in Minas Geraes, to Formosa, in Goias, thus forming another link between the industrial centre and the agricultural districts of the west.

Publications Received

Riveting of Aluminium.—Bulletin No. 8, issued by the Aluminium Development Association, 33, Grosvenor Street, London, W.1, deals with the progress leading to the successful development of aluminium rivets of varying diameters. In revising the publication, its field of application has been broadened to cover the needs of users in riveting every kind of structure, and discusses factors of a general, though fundamental, character, such as choice of rivet material, ranges of sizes and head shapes, with the manufacture of rivets and factors of design of riveted joints. Other sections deal with the riveting of light assemblies and large structures, equipment required, preparation for riveting, driving techniques, inspection, and so on. Appendices include notes on mechanical testing of rivets, heat treatment, and tables of rivet lengths related to grip thickness and rivet dia. Copies are available at 2s. each.

Directory of Welding and Fabricating Equipment.—Section I: Metal Arc Welding Electrodes. Published by the Louis Cassier Co. Ltd., Dorset House, Stamford Street, London, S.E.1. Reprinted from *Welding & Metal Fabrication.* Size 11½ in. × 8½ in. 35 pages. Price 3s. 6d., by post 3s. 9d.—This is said to be the first comprehensive guide to the entire range of electrodes now available in the United Kingdom published. Engineers may see at a glance details of each British electrode for welding any metals at present used in the fabricating industries. The directory is divided into five parts, dealing with electrodes for arc welding mild steel, alloy steels, cast iron, and so on. Electrodes are grouped under the name of the respective manufacturers, and details are given for each electrode, together with any special features. Where the electrodes carry identification markings, these are referred to, so that the electrodes can be easily recognised. Recommended welding positions are given, and the British Standard Classification numbers are shown against the electrodes of welding mild steel and the medium- and high-tensile steels, according to B.S. 1719: 1951.

Serck Radiators.—An illustrated publication issued by Serck Radiators Limited, Birmingham, gives an interesting account of the development of the firm since its inception in 1907. It also provides much information on the various processes involved in the manufacture of different types of radiators, petrol tanks, heat exchangers, oil coolers, and so on. Many of the manufacturing processes are illustrated; these include radiator construction and testing, air and gas coolers for oil engines and gas turbines, heavy and light machine shops, and the manufacturing of non-ferrous tubes up to about 3-in. dia. for which extrusion presses up to 1,500 tons are installed.

Calendars for 1955.—We acknowledge the receipt of calendars for 1955 from the Pennsylvania Railroad; the Westinghouse Brake & Signal Co. Ltd.; Henschel und Sohn, G.m.b.H.; and Sidervia S.A. (Vaduz).

Boël Steelworks.—The large production of steel castings and forgings for railway motive power and rolling stock, including wheel centres, tyres, axles, Isothermos axleboxes, and other details are covered in a 60-page publication from the La Louvière works in Belgium of the Usines Gustave Boël S.A., a plant currently employing about 3,000 men. Rail sections, cast manganese steel crossings and chequered plates are other large-scale products. Most of the information in this book is given in four languages—French, English, German and Spanish.

Hump Yard Equipment.—Catalogue section part 13, section 1. Issued by Westinghouse Brake & Signal Co., 82, York Way, London, N.1. 31 pages. 11 in. × 8½ in. Five diagrams and drawings; 37 photographs.—This well-illustrated publication gives a general account of the questions involved in laying out hump classification yards and the operation of Westinghouse type retarders and point operating and control mechanisms, with the route unit system of working and storage of controls when required. A good selection of photographs shows the actual installing of a retarder, with views of equipment in service, types of hump cabin control desks, yard signals, etc. The drawings facilitate understanding the photographs and provide technical details of the construction and functioning of the retarders. The equipment depicted has been in use at several yards, at home and overseas, for some time and is the result of much experience in this field.

Party Outings.—A series of seven booklets under this title has been issued by the six Regions of British Railways and the London Commercial Service. These booklets contain suggestions for day and half-day rail and coach sight-seeing tours from London and other large cities and are intended to be useful to organisers of outings from firms, school excursions, and other party trips. Details of other types of excursions are also given, and there are particulars of many railway facilities, such as packed meals, which can help the party organiser. Copies of the London Commercial Service booklet can be obtained at 22, Charing Cross Road, W.C.2, or from railway service representatives in the Regions, and applications for booklets issued by Regions should be made to stations.

Holidaymaking, 1955.—This attractive booklet, which is issued by Thos. Cook & Son Ltd. and Dean & Dawson Limited, sets out details of the 1955 Continental holiday tours programme. There are many illustrations, including colour photographs. Most of the tours include travel by rail and sea or air at the tourist's option. Holidays are listed in Austria, Belgium, Scandinavia, France, Germany, Holland, Italy, Spain, Switzerland, and Jugoslavia, and there also are tours to Cyprus, Gibraltar, and Malta. Other suggestions include yachting holidays and coach tours.

Any Time is Travel Time in Germany.—This publication of the German Central Tourist Association gives details of tourist attractions for the whole year. There are many illustrations in colour and lists of tourist pamphlets, folders, magazines and posters are included. There is a section on the German Federal Railway with a distance table, fare table, and particulars of international connections and sleeping- and dining-cars.

Europabus Programme.—The programme of Europabus for the 1955 summer season includes important innovations, notably new routes in Spain and Portugal. There are also several French services which have not previously appeared, in particular the castles of the Loire and the Gorges of the Tarn, as well as lines in Morocco. The Europabus network also includes several regular connections with London, via Ostend and the Hook of Holland; the section in Britain is covered by the East Kent Road Car Co. Ltd. The guide includes timetables and fares for the principal routes in dollars and sterling.

THE SCRAP HEAP

Station Handbell of 1847

A bronze station handbell found among some metal scrap has been presented to the German Federal Railway. It bears the inscription "Bergisch Maerkisch Eisenbahn" and another denoting that it was cast in 1847. The railway referred to which today connects the various portions of the amalgamated town of Wuppertal, derives from a concern founded in 1843 to join Elberfeld and Barmen to Dortmund and Hagen, with westward connection through to Düsseldorf. It was opened in 1847, when the bell was provided. In 1850 a State railway divisional management was set up, the forerunner of the present Bundesbahndirektion Wuppertal.

A Riviera Jubilee

A little over 50 years ago the "Côte d'Azur Rapide" of the Paris, Lyons & Mediterranean Railway made its inaugural trip from Paris to Nice. The first schedule of this train is believed to have been 13 hr. 50 min. for the 676 miles. It was the first, and for some time the only day service between Paris and the Riviera and ran only in the winter season. In its early days the "Côte d'Azur" consisted of only five vehicles—two first class coaches, a restaurant car, and two brakevans—and was hauled by a 4-4-0 compound with "windcutter" cab. The train was withdrawn during the first world war, after which it seems to have been impossible to travel to the Riviera by day until the inauguration in the late 1920s of the "Côte d'Azur Pullman," an all-Pullman train which included a dancing saloon.

The successor of the "Côte d'Azur" today is the "Mistral," which runs from Paris to Nice in 11 hr., and is electrically worked from Paris to Lyons, 318 miles, in 4 hr. 10 min. The name "Paris-Côte d'Azur" is borne by the night express following the "Blue Train" from Paris to Ventimiglia; it is allowed 13 hr. 15 min. from Paris to Nice.

Mister, That's the Last Train

Come Saturday and the last passenger train will make its last run over the Northern Pacific's South Bend branch in Washington. It is tragic news, yet it will startle no one, for we have become too used to these disasters, fruits of the motor age. The process has been going on for a quarter-of-a-century. It is evident that the pattern of railroad decay begins with the branches. Passenger service is reduced, then eliminated. Often the freight service follows the varnish trains. Then the branch is abandoned, the rails pulled up, the ties burned. while the kindly alder and fireweed attempt to hide the naked lie of a surviving sign that says "Look Out for the Engine."

Though the South Bend branch will continue as a freight hauler, its life really ceased with the last passenger train; or so it will seem to us who rode the branch when the cars were four and even five and were a handsome dark red, and the locomotive gleamed like a great black diamond. You could have your breakfast then at the depot dining room in Centralia, and mount the *South Bend Flyer* on the sidetrack. . . . The metropolis was Raymond, where the seagulls gathered at the depot when they saw Billy, who met all the trains, coming with his handtruck; and a moment later the *Flyer's* whistle let go at Willapa, telling all she was on time and rolling fast. It was a great moment, repeated continuously for nigh 60 years. All who ride that last train or see it pass now will be as dated as their grandparents, who wept to see the last stagecoach, just before the Iron Horse took over.

One hopes that the *Flyer* passes her last whistle-post with the steam dome rocking and the magic sound pealing out in volume to be heard by ships at sea, and by cougars on the mountain. And may the echoes reach that Valhalla where live the shades of the train crew who rode first over the South Bend branch when the world was young, the skies were blue. and Steam was king. —*From the "Portland Oregonian," March* 15, 1954.

Last of the Old West

The life of Nevada still clings tenaciously to its few lines of communication. Nowhere in the world, perhaps, are the railways so closely interwoven with everyday affairs, or so redolent with history and nostalgia. At Imlay, near the centre of the State, there is a club for railwaymen positively alive with the fables of the railroads, with the smell of ancient steam still hanging around its yellow wooden walls, and linesmen sipping coffee from old-fashioned mugs for all the world as if the woodburners still passed outside. One of the great sights of modern America is that of a freight train, a hundred trucks or more, headed by a mighty diesel, pursued by wraiths of romance, streaming across a distant desert for Santa Fe or the Pacific. In Nevada such things are part of the fabric of society.—*From "The Times."*

Second Class Ladies

Photo] *[A. I. Peddie*

Waiting room sign at Dunblane, Scottish Region (formerly Caledonian Railway), believed to be the only second class waiting room sign in Scotland

New Year's Eve

The century grows older: so do we,
And some of us may never live to see
Whether the latest projects will prevail
And bring rejuvenation to the rail.

None of us can predict what lies before,
Nor does that matter, if the opening door
Gives substance to man's fondly cherished dream
That things are somewhat better than they seem.

No more distracted by outworn disputes,
No more obsessed by profitless pursuits,
Let us keep clear of those alluring tracks
Which land us in so many cul-de-sacs.

Here is a portent to dispel our gloom:
The Treasury at last declares a boom!
That ought to make us glad to be alive
To have a share in 1955.

So, let us strive together, till the train
Takes up its old supremacy again,
For duty's call is not vicarious,
And, in the end, so much depends on *us.*

A. B.

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OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

RHODESIA

All-Electric Signalling at Bulawayo

The new signalling system at Westgate, Bulawayo, was brought into partial service on October 6. At the moment the box controls the Cape main line between Bulawayo and Westgate as well as the marshalling yard at Westgate. When the Salisbury line is deviated north of the city it will also control the double track between Mpopoma West and Bulawayo.

The box is a double-storey building accommodating the control panel on the upper floor and the relay room, battery room and mechanician's workshop on the ground floor.

The signalling installation is of the relay interlocking type and is completely electrical. All points are power-operated and all running signals are colour-lights. Shunt signals are of the position-light type. The control panel, constructed in the Signal & Telegraph Engineer's Workshops in Bulawayo, is of console pattern.

A feature of the installation is the method of working between Westgate and Bulawayo West cabins. A number of main-line running signals between these two cabins are dual-controlled and can be cleared only with the co-operation of both signalmen.

NEW ZEALAND

Long-Welded Rails

The new Rimutaka deviation will be the first line in New Zealand to be laid with rails welded together by the flash-butt method, but eventually all main-line renewals will be carried out with welded rails. Although some welded rails have been used in the North Island for nearly 20 years, they were welded on the site by an older and slower method. The Railways Department now intends to mass-produce welded lengths of rail at central depots and carry them where they are needed on specially-equipped trains.

Three depots equipped with British-made flash-butt welding machines will meet all requirements. The first, at Woburn, is almost ready to begin production and those at Otahuhu and Middleton (in the South Island) are under construction. Much of the process is automatic, and when in full production each of the three plants will be capable of making 50 welds a day, or sufficient rails to lay more than ¼-mile of track. On the outdoor sections of the Rimutaka deviation the rails will be welded in sets of three, but inside the long tunnel the standard unit will consist of nine rails welded together.

VICTORIA

Improved Services

Because of improvements made possible by the use of the new "R" class 4-6-4 steam locomotives and by the diesel-electric locomotives more and faster train services were introduced in August on three main lines.

The weekday morning services to Albury and Tocumwal are now operated as one train out of Melbourne (depart 8.15 a.m.). At Seymour, 60 miles, the express is split, one section going to Albury and the other over the Goulburn Valley line to Tocumwal. The physical junction is at Mangalore, a few miles north of Seymour. Previously both trains left Melbourne separately, for Albury at 7.55 a.m. and for Tocumwal at 8.15 a.m. The Melbourne-Seymour route has been provided with an extra train on weekdays at most stations. It leaves Melbourne at 7.25 a.m. and returns to Melbourne from Seymour at 9.30 a.m.

Trains on the Geelong-Warrnambool-Port Fairy route have been accelerated by up to 17 minutes in a revised time table. On Saturdays only the 1.40 p.m. train runs through to Dimboola instead of terminating at Horsham as formerly. On the return journey on Monday mornings the train now leaves Dimboola at 7.35 a.m.

CANADA

Federal Subsidy Recommended

The Federal Government Arbitrator in the contract dispute between the railways and the unions awarded non-operating employees an estimated $7,000,000 a year in "fringe" benefits and recommended a Federal subsidy for the railways. The Chief Justice of British Columbia suggested the subsidy to compensate for the low rates on grain conveyed to Western Canadian ports.

ARGENTINA

Fare Increases

As from November 15, main line fares and parcels rates have been increased by approximately 30 per cent. The price of sleeping car berth tickets has been raised from 75 pesos to 100 pesos. For the moment goods and suburban rates remain unchanged.

UNITED STATES

Reduction in Free Passes

On and from January 1, some of the chief railways will reduce the number of free passes granted to staff of other systems. An official of the Pennsylvania Railroad, who announced this, said that declining passenger revenues were the reason for this decision. The annual losses on passenger service of the larger Eastern systems, he added, were as much as $60,000,000, and they had to begin to cut their losses. The regulations governing the issue of passes by each railway to its employees for travel over their own lines would not alter.

New Main Line to Dallas

Dallas, Texas, is served by the Atchison, Topeka & Santa Fe Railway, but the route is circuitous and much passenger traffic goes by bus to and from Fort Worth. Consequently, in 1953, the Santa Fe sought powers to construct a new direct line between its main line and Dallas. The route then selected, however, was not approved by the Interstate Commerce Commission because it missed the town of Denton by 20 miles. A revised alignment serving Denton was

Diesel Haulage in Thailand

"North Express" hauled by 1,000 h.p. two-unit diesel-electric locomotives leaving Chieng Mai for Bangkok

subsequently sanctioned and tenders for the construction of its earthworks, buildings, and bridges were due to be received on November 29 last.

The approved line is 49 miles in length and, although it will be single, it will be used by the "Texas Chief" streamline trains, and the standard of construction and equipment will be generally high. It will leave the main line to Kansas City and Chicago about five miles south of Sanger, and run via Denton and Lewisville to join the existing Dallas-Paris line some 10 miles north-east of Dallas. Bridging will be light and the quantity of earth to be moved totals only 3,300,000 cu. yd., so that the estimated cost of construction is only about £2,320,000. Permanent way, signalling, and communications are being constructed by the Santa Fe railway staff. The new link is expected to be opened for traffic by December, 1955.

ITALY

New Through Service to Sicily

Although through trains have long been available for passengers wishing to traverse the east coast of Italy from the North to Bari and Brindisi, passengers by the west coast line to Sicily have normally to change trains in Rome or Naples. To overcome this, the State Railways inaugurated a year ago the through "Southern Arrow" service from Milan to Sicily, and have now added a similar train from Turin and Genoa, with through coaches daily to Palermo and Syracuse and a sleeping car running alternately to each city. The new train began to run on December 19, and like the "Southern Arrow" which calls at Rome Tiburtina avoids Rome Termini by calling instead at the through station of Rome Ostiense. Both trains use the Central Station at Naples.

SWITZERLAND

Cars through Gotthard Tunnel

The movement of motorcars through the Gotthard Tunnel has now attained such dimensions that special measures are being taken by the Swiss Federal Railways to handle it. In 1938 8,525 cars were run through the tunnel, and 22,838 in 1948; each year from 1951 to 1953 the number was between 44,198 and 46,250, and in 1954 the total up to the end of October alone had mounted to 46,500. On Whit Monday last 2,000 cars were worked from Airolo to Göschenen in a single day.

In the ordinary course, 40 cars an hour can be run through the tunnel on a train of flat wagons, and this can be increased in length, and if necessary run in two sections, to carry from 65 to 130 cars an hour, without interfering with the heavy passenger and freight traffic through the tunnel.

When signalling improvements in the 9¼-mile tunnel, which will divide the present two block sections up into four, have been carried out, it will be possible to run two or three motorcar trains hourly in each direction, carrying from 136 to 204 cars, and making a total in 12 hr. of 25 to 32 trains with 1,700 to 2,176 cars.

At present fr.4,000,000 are being expended on the transformation of the station at Airolo, including the provision of a new independent track for the motorcar trains, with special loading docks and appliances for rapid loading and unloading of the cars on and off the flat wagons. The same provision is to be made later at Göschenen, at the other end of the tunnel.

Duplicate Gotthard Tunnel

Such is the importance with which car traffic is regarded that a serious proposal was made at the general assembly last summer of the Swiss Motor Road Association for the boring of a second Gotthard tunnel. This would be built by the Swiss Federal Railways and the road authorities in conjunction, and would be a single-line railway tunnel, with a passing-place in the centre, devoted exclusively to motorcar transport.

The new tunnel would make possible the movement of 222 cars an hour in both directions, or 390 an hour in one direction only, which would be practically equal to the maximum capacity of the roads giving access to the two ends of the tunnel.

FRANCE

Unloading at Lyons

Experiments have been carried out at Lyons (Part-Dieu) with a new type of apparatus known as a *scraperette* to hasten the unloading of coal and other bulk-loaded goods. It consists essentially of a mechanical shovel inside the wagon connected by a cable to a winch outside the wagon. A switch on the shovel enables an operator in the wagon to control its operation. By means of the shovel the load is pushed through the wagon door into a hopper on the ground, whence it is lifted by a mobile elevator to lorry or stack. The device may be operated by one man, and a 20-*tonne* wagon of coal has been emptied in an hour. This has both saved labour and speeded wagon turnround.

Diesel Instruction Coach

The Western Region has converted a four-axle diesel railcar into an instruction vehicle for training railcar drivers. The converted coach includes a large central room about 36 ft. long, which can be used as a lecture room for showing instructional films or for practical work on scale models, mock-ups and large-scale diagrams. In small compartments under the floor at the side of the central room are working models of the brake gear on typical diesel railcars and trailers; these compartments are covered by trap doors which can be lifted when it is desired to study brake equipment. The brake equipments can be linked to give the effect of multiple-unit working. When the coach is stationary over an inspection pit, a mobile ladder at one end of the central room gives access to the pit for the underneath examination of the brake apparatus.

Other facilities include two mock-up driving seats with controls enabling training to be given in the operation of electrical equipment and brakes, a cinema projection room, a room for electrical training equipment and an office for the instructors. Courses last two weeks, and eight students attend each course. A 300 h.p. railcar is also available during each course so that practical instruction and theoretical training may be carried on at the same time.

SWEDEN

Ferries to Germany

The train ferry between Trelleborg, and Sassnitz, Eastern Germany, carried about 3,500 passengers during the three summer months, including nearly 1,400 travelling by the Swedish sleeping car which runs twice a week through to Berlin.

Much heavier traffic has been carried by the ferry between Trelleborg and Travemünde, near Lübeck, in Western Germany. Introduced in 1953, it carried nearly 66,300 passengers and 3,800 motorcars during the summer of 1954, when 209 single trips were made. The ferry left Travemünde in the morning and Trelleborg in the evening. When the summer service is introduced next year, it is intended that the ferry shall leave from Trelleborg in the morning and from Travemünde at night.

Services to Bornholm

The "Bornholm Arrow" is a light diesel train which has been put on to improve the feeder services to Ystad and Simrishamm, the two South Swedish ports from which the regular ferry boats sail for the Danish Baltic island of Bornholm.

For Danish visitors to Bornholm, the journey via Sweden is faster than the journey by the direct boat from Copenhagen. The "Bornholm Arrow" takes 1 hr. for the trip from Malmö to Ystad whence the boat connects to Ronne in South Bornholm so that the overall journey from Copenhagen to Ronne via Malmö and Ystad takes only 7 hr.

Because of the shorter sea-crossing, the journey via Simrishamm to Allinge, North Bornholm, is even shorter (6 hr. 20 min.), as the "Bornholm Arrow" makes the 60-mile journey from Malmö to Simrishamm in 1 hr. 20 min. The "Bornholm Arrow" is used in addition to perform journeys between Simrishamm and Kristianstad where connection is made with Stockholm trains, but, because of the absence of Danish through traffic, the number of passengers carried on these trips is considerably smaller.

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Management Problems on the Nigerian Railway

A reply to criticisms that arrears of groundnut traffic have been caused by the pursuit of efficiency

By F. Sander,
Chief Accountant, Nigerian Railway

THE article by Mr. A. R. G. Saunders which appeared in the issues of *The Railway Gazette* for August 20 and 27, and September 3, contains gratuitous criticism of the Nigerian Railway administration which calls for comment.

The author's argument fails from the outset because it is based on too narrow a conception of the nature of the statistics which indicate standards of efficient railway operation. It assumes that the management of some hypothetical railway might restrict the use of its power and carrying capacity in order to obtain good statistics of partial operation, without reference to those other statistics which must reflect its equally bad ratio of utilised to potential capacity.

To determine the standards of efficiency it is essential to consider not only the manner in which those units which worked were employed, but also to ascertain whether or not the available capacity was used to best advantage. The prosperity of a railway must always depend on the most efficient application to revenue-earning purposes of its stock of locomotives and vehicles, which statement implies adequate standards of maintenance and repair, the avoidance of unnecessary running and unproductive locomotive hours, quick transit times, efficient wagon turn-round and, above all, low costs, and a reasonable tariff.

Indications of Efficiency

A very high wagon load and train load are not necessarily an indication of maximum operational efficiency. The assessment of the standard of efficiency requires that a considerable number of statistics should be considered in relation to one another, but if for any reason it should be thought necessary to indulge in the over-simplification which characterises the argument of the article by Mr. Saunders, the figure of net ton-miles per train engine-hour would be the obvious yard-stick of measurement. Even so, this figure considered out of its context might be extremely misleading. The first enquiry must be to determine from the statistics of engine and vehicle user and performance whether or not the best advantage is being taken of the available stock. Assuming that no more than a normal proportion of locomotives and vehicles is under or awaiting repair and that the serviceable stock is running at or near maximum capacity (an assessment of which will itself require reference to other statistics) efficiency of operation of the available units becomes the prime consideration.

The proper appreciation of statistics should enable management to anticipate the approach to such an intensive use of haulage and carrying capacity by the ordering of additional engines and vehicles, assuming that the volume of traffic does not represent a peak unlikely to recur, that a steady expansion of traffic may be expected, and that funds can be found for the purpose, which in circumstances other than the strictest limitations on borrowing should present no difficulty. The opinion that a railway's prosperity is inversely related to its efficiency of operation is of the most doubtful validity and could in extreme cases be maintained only when the capacity of the railway substantially exceeded the volume of traffic offering.

The method by which the increase in passenger and goods revenue was secured in Sierra Leone is not explained, but the reader is assured that all benefits arose from a flight from "efficiency." Certain facts are stated, from which certain inferences may be drawn. "In just over two years from the beginning of 1950 an increase of (passenger) revenue occurred, amounting to not less than 70 per cent, secured without any increase in the number of locomotives or passenger vehicles or in the fares." From this, and the substance of the general argument, it can safely be inferred that the additional revenue was not derived from an increase in the number of passengers per train, or in the average length of passenger journey, but from an increase in the number of trains run.

We are told that the number of locomotives and coaches was not increased and it must therefore follow that in the course of the two years much more efficient use was made of the engines and rolling stock available, either by improving standards of repair and maintenance or by more intensive working. Intelligent appreciation of the ratio of passenger-miles to capacity seat-miles would indicate the need to augment the service. Locomotives were available but either unfit for work or used only to partial capacity. The course of action was clear, and its effect would be indicated by an improvement in engine-user statistics, passenger journeys, and miles. The ratio of passenger-miles to capacity seat-miles would fall from the hitherto excessively high figure and, taking all the statistics into consideration, a general improvement in operational efficiency would be shown.

Use of Stock

The fact that variable railway costs of operation are so small by comparison with the much greater proportion of fixed costs makes all the more obvious the desirability of making the best use of the available stock of locomotives and vehicles. If there should be sufficient engine power available it would be suicidal to refrain from running as many trains as the traffic demanded for the sole purpose of obtaining maximum train loading figures.

On the other hand, if, for any reason, the volume of traffic expands more rapidly than the locomotive power and wagon capacity of the railway can be increased, then it would be equally ill-advised not to employ every engine and wagon to the very best advantage. In such circumstances the statistics of engine availability and use, of train loads and wagon loads, net ton-miles per train engine-hour, and the rest of the efficiency figures, should be at a level of optimum performance. There can be no argument in such circumstances but that the prosperity of the railway, and of the country in general, depends upon efficiency of use of every available unit of transportation.

Forecast of Traffic Trends

It might be contended that a proper forecast of traffic trends would avoid a deficiency in railway capacity but in an under-developed country where the tempo of development can vary so suddenly, and (the major demand being for carriage of primary products) where the temporary variations caused by climatic conditions can obscure the overall picture, the accurate anticipation of requirements is not always possible. It should also be remembered that, even when the need to augment engine power is appreciated, the failure of crops in more than one year may leave the railway without the necessary reserve of resources to enable it to continue its capital expansion, and this may well happen at a time when the borrowing of money is restricted. This did indeed happen in Nigeria in the years 1949-50 and 1950-51, when the volume of the groundnut crop was as low as 198,000 tons and 145,000 tons respectively. At that time, out of orders for 102 main-line locomotives 47 had been delivered.

In the two years in question the Nigerian Railway operated at a loss. Borrowing powers were limited and such money as was available was earmarked for essential work. During the next three years the groundnut crop averaged slightly more than 400,000 tons a year, substantially exceeding any previous records. Renewed prosperity enabled orders to be placed for a further 37 steam locomotives and 10 diesels. The rate of traffic increase has, however, exceeded the delivery rate of new engines. There are not only groundnuts to consider. Other traffics, and in particular foodstuffs and other commodities for consumption within the country,

have increased in even greater proportion. All the more reason exists therefore for the railway to be operated to maximum efficiency, as indicated not only by the statistics of train-load and wagon-load but more importantly by those which reflect the most intensive use of engine-power and wagons, consonant with adequate maintenance and workshop repair.

Far from the pyramids of groundnuts being the result of the pursuit of efficiency, if the level of efficiency had been lowered there would have been a much more widespread accumulation of traffics awaiting movement.

Preparation of Estimates

If Mr. Saunders believes that the pursuit of efficiency is forced upon the Nigerian Railway by the restrictions of Government finance, he is again wrong, at least as far as the postwar years are concerned. The annual estimates are framed on the foundation of the estimate of revenue for the forthcoming year. At the time when this estimate is made it is possible to obtain a fairly accurate assessment of crop prospects. The trend of other traffics is made reasonably evident by statistics and in actual experience the revenue estimates, both in tonnages and receipts have proved to be very close to reality. Admittedly in the past few years the capacity of the Railway, assessed on existing power and expected deliveries, has been a governing factor which in providing an automatic limitation has assisted in estimating.

From this estimate it is possible to forecast the train and engine mileage, the workshops repairs required, and similar standards of output which are linked to traffic performance. Other costs must obviously be controlled in relation to revenue so that, taking one year with another, revenue will at least cover the expenditure, including allowance for a fair return on the capital involved.

The principle is the same, whether the railway is government or commercial and while government procedure is slower in action it is difficult to believe, in the event of an unforeseen increase in traffic occurring during the year and the railway having adequate capacity to carry it, that any legislature would not willingly approve the necessary increase in operating expenditure if the facts were quickly and adequately placed before it. The system may be cumbersome, but it is not inflexible.

The inability of the Nigerian Railway in the past to clear the total crop of groundnuts was the combined result of time-lag in the delivery of locomotives, the unprecedented volume of three consecutive groundnut crops which coincided with a steady rise in all other traffics, and the deficiencies of equipment and staff caused by war and only now being overcome. When, in the near future, the last of the engines on order are received it will be possible to handle all traffics expeditiously, at a level equivalent to 400 per cent of 1939 standards and 250 per cent of 1945 standards.

It is probable that the groundnut crop now being harvested may be smaller than those of the past three years. If this is so the Nigerian Railway will once again be in a position to canvass for other traffic. The lost groundnut tonnage will be made good, in part at least, by other goods and produce. The sources of these alternative traffics will not be so concentrated, the length of haul may be less, the revenue per ton-mile much smaller. Prosperity may decline from the exceptionally high levels of recent years and with it may decline some of the statistics of train and engine performance. The variation will, however, be in direct ratio, and not inverse, as Mr. Saunders would have us believe.

Allocation of Operating Costs

It is surprising to learn that in Sierra Leone the allocation to the various services of the cost of railway operation has been found to be quite easy. It is not possible, by reference to the annual report of this railway, to determine what these costs are. It must be assumed that costing, in this context, refers only to the direct expenses of train operation and that it excludes all costs which are common to both passenger and goods traffic, for example, civil engineering maintenance, station and yard staff, maintenance and depreciation of plant, buildings and installations, administration, pensions, and interest on the capital. Even so, it is difficult to appreciate how, within the limitations of train capacity imposed by narrow-gauge working, the cost of carrying goods per ton-mile can be reduced to so low a figure as one half-penny. This is a statement which requires some interpretation of what is meant by cost. In Nigeria in 1953-54 the direct cost of carrying goods per ton-mile was as follows, the average net train-load being 210 tons.

	Cost per paying net ton-mile
	Pence
Footplate staff	0·08
Train staff	0·02
Fuel	0·23
Water	0·03
Lubricants	0·02
Net train running cost	0·38
Running shed maintenance of locomotives	0·14
Maintenance of wagons in traffic	0·05
Workshops repair of locomotives and wagons	0·17
Depreciation of locomotives and wagons	0·13
Total direct train running costs	0·87

The cost per ton-mile of all those other expenses which Mr. Saunders calls "fixed costs" amounted to 0·92d., and interest charges on capital 0·22d., producing an all-in cost of 2·01d. per net ton-mile of public traffic. The *average* charge per ton-mile must therefore be not less than 2·01d. In practice the rates varied from ·82d. for the lowest rated traffic to 6·32d. for the highest, the average return being 2·87d. per ton-mile.

From this it follows that, on the Nigerian Railway under present conditions, a goods train will pay for its direct running cost if it carries 60 tons of paying traffic, and the all-in cost if it carries 150 tons. A passenger train requires to run to 25 per cent capacity to pay the bare running cost and 60 per cent capacity to pay all costs, including interest charges on capital.

When all the locomotives and wagons now on order have been delivered consideration of such factors will play an effective part in the search for traffic, but until then the use of every engine and wagon must be maintained at the highest level of efficiency in both its real sense and the narrower intepretation adopted in the argument put forward by Mr. Saunders.

CLOSING OF L.M.R. GOODS STATIONS.—British Railways, London Midland Region, announce that Hindley & Amberswood goods depot, between Preston and Tyldesley, will be permanently closed for all traffic on January 3. Alternative arrangements have been made which will cause no inconvenience to traders.

BRITISH RAILWAYS APPRENTICES TO TRAIN AT SCHOOLBOYS' OWN EXHIBITION.—Visitors to the Schoolboys' Own Exhibition, which opens at the Royal Horticultural Hall, Westminster, on December 31, will be able to see British Railways trainee apprentices at work on engineering crafts. Twenty-four apprentices and eight instructors from the British Railways Works Training Schools at Derby and Wolverton are to spend a fortnight in London to enable visitors to the British Railways stand at the Exhibition, particularly schoolboys, parents and schoolmasters, to gain an insight into training methods. The trainees will be engaged in metal-working, painting, moulding, coach-trimming, electrical installing, and other crafts required in the railway industry. Machine tools, a smith's hearth, moulder's crucible and work benches are being brought from the schools so that they may continue their courses of practical instruction. The British Railways will also include a "careers counter" where enquirers may obtain full information and literature about careers in the railway service. The principal feature of the British Road Services stand will be the cab of a 14-ton lorry, and visitors will be able to "drive" the vehicle, starting the engine, changing gear and operating the lights.

VISIT OF HIGH COMMISSIONER FOR CEYLON TO BRUSH BAGNALL TRACTION LIMITED WORKS.—Sir Claude Corea, High Commissioner for Ceylon, and Lady Corea, visited the Loughborough works of Brush Bagnall Traction Limited on December 17 to inspect diesel-electric locomotives now being manufactured for the Ceylon Government Railway. A total of 25 locomotives, 1,000 h.p. A1A-A1A, has been ordered, and 14 so far have been delivered. The order is worth more than £1,000,000. The first locomotive was formally handed over, at Loughborough, to Sir Claude Corea's predecessor, Sir Edwin Wijoyeratne, on November 20, 1952.

XUM

Experimental Facing Point Lock on L.T.E. District Line

Trials are being made with the French National Railways enclosed point lock, which secures the closed tongue of the switches to the stock rail

ON the occasion of the visit of the Institution of Railway Signal Engineers to the French National Railways in May, 1952, attention was attracted when inspecting the installations at Bobigny and Bry-sur-Marne, which had junction connections, to the standard S.N.C.F. type of facing point lock known officially as the *verrou carter-coussinet*. Its neat, compact design and feature of securing the closed tongue of the points directly to the stock rail appealed to several of the visitors and some discussion arose on the possibility of applying such an arrangement to railways in Great Britain.

Mr. R. Dell, Signal Engineer, London Transport Executive, a Past President of the Institution, formed so favourable an impression of the apparatus that he decided later to obtain a set of fittings and investigate their application to the requirements obtaining on the London Transport Executive lines, where the electro-pneumatic system of point operation is standard.

The equipment examined in France was seen attached to flat-bottom track, met with extensively there, and it became necessary to see how it could be adapted to the bull-head permanent way in use on the London underground lines.

This did not prove very difficult, however, and after a certain amount of work had been done in this direction a design was produced enabling a ground track lock, applied to facing points in L.T.E. installations, to be incorporated in the layout.

After all details of the work had been settled and a complete set of equipment applied to points in the works a pair of facing points at the eastern end of Earls Court Station, leading from platform No. 2 to the eastbound line to Gloucester Road and Kensington High Street, over which a large number of trains are routed daily, were fitted and have since been in regular use with very satisfactory results.

Features of the New Lock

A free rendering of the French description, above given, would be "totally enclosed chair type point lock."

The locking mechanism proper is contained in a casing which forms part of the chair supporting the end of the point tongue and there is thus a separate lock for each tongue instead of a central bolt, or plunger, acting on the stretcher bar, as with the type which is ordinarily met with in the United Kingdom.

The locking of point tongues by mechanism individual to each and registering their position with respect to the stock rail, against which they are required to bear in each extreme position, has been known on the Continent for a very long time. There are several varieties of locks in use there possessing this feature such as the hook and clamp designs, well known in Central Europe. There they are met with in trailable form, under which each tongue moves independently, being not connected rigidly to the other but only through the actual driving connection and its attachments. The principle of securing the closed tongue to the stock rail can, however, be followed without trailability necessarily being involved, as is the case with the design under notice. We are indebted to Mr.

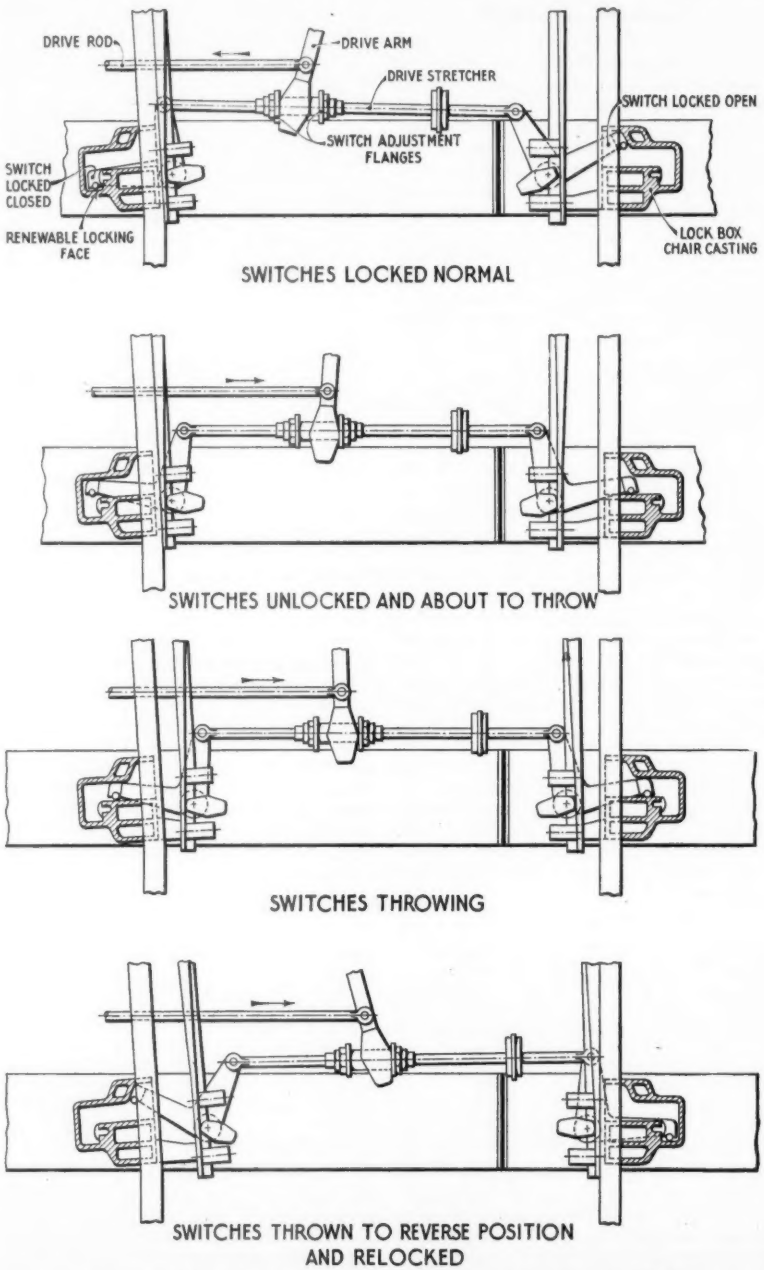


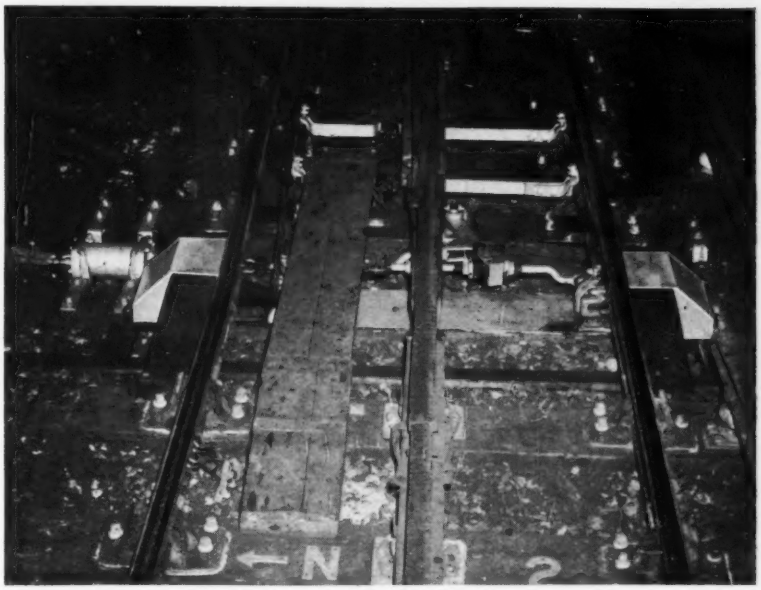
Diagram showing operation of enclosed type facing point lock

Dell for facilities to inspect the equipment at Earls Court and for the photographs and information here reproduced.

Constructional Details

The driving rod of the layout is connected to two switch locking arms which pivot at each switch tongue and are in the form of cranks, one arm of which is attached to the drive mechanism. The other is provided with locking faces which engage with corresponding ones in the chair casting in order to effect the locking of the tongue.

The operation is shown in four stages on the accompanying diagram drawing from which it will be seen that, for the time being, the closed tongue is held clutched to the stock rail when locked. In (*a*) the points are shown closed and locked normal. In (*b*) they are unlocked and about to be thrown. In (*c*) the reversal of the points is in progress and finally in (*d*) they are shown completely reversed and locked once more in that position. The working is thus very simple and is completely effective for its object. It will be noted that when the closed tongue is clutched to the stock rail the open tongue also is positively locked by the crank attached to it bearing against a face of the chair casting, unlike the case with the trailable types of apparatus referred to above, in which the open tongue has to be free to move under the wheel pressure, independently of the closed one, in order to initiate the unlocking of the latter in time to avoid damage.



View of layout in service at east end of No. 2 platform, Earls Court Station

The electrical detection, as provided in the S.N.C.F. equipment, consists of a rotary commutator mounted above the locking mechanism in each chair casting and contained within the same

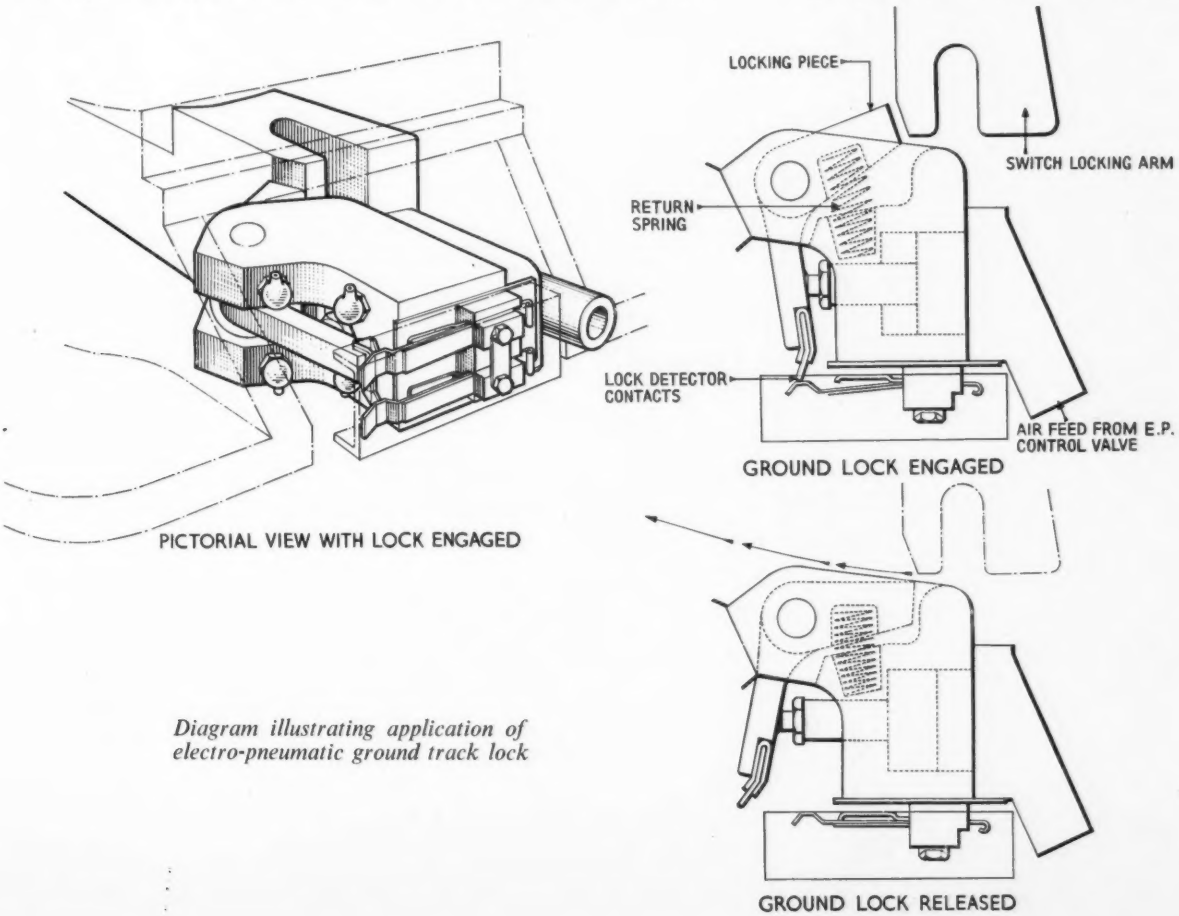
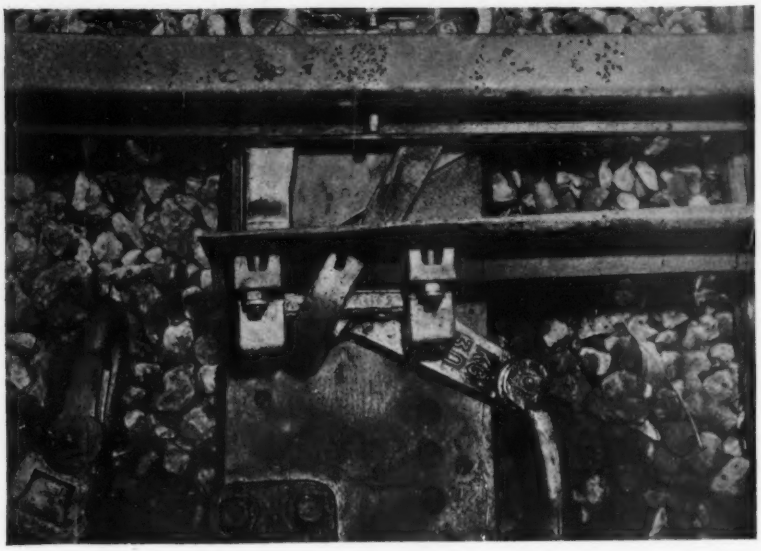


Diagram illustrating application of electro-pneumatic ground track lock

XUM



Open point tongue in locked position

cover. This is rotated by a tail piece engaged by the end of the locking crank and cannot close its contacts unless that has properly completed its stroke. In addition, the commutator has a certain amount of lateral motion against spring power, given to it by a plunger passing through the stock rail and acted on directly by the closed tongue itself when it reaches its home position. Unless therefore the tongue is closed and the transverse motion of the commutator been completed, and finally the crank is in the locking position and has rotated the commutator in addition, the detection circuit, as far as that tongue is concerned, is not made up. This circuit, however, is made also to prove that the companion commutator on what is now the open tongue has moved back to its non-actuated position and therefore that no part has become jammed and both the rail plunger and commutator have moved as intended.

It is contemplated, however, in the case of the London Transport installation, to complete the detection of the open tongue by an attachment which will prove that it is open to the required full extent, not effected positively by the S.N.C.F. equipment as it stands, reliance being placed for that on the general integrity of the fittings.

Ground Track Lock

It is standard practice on the L.T.E. lines for power points to be equipped with an independent ground track lock, energised on an entirely separate circuit from the signalbox and subject to the same controls as apply to the lever concerned in controlling operation of the point mechanism itself, as a safeguard against any irregular movement, under a passing train or otherwise. This makes it necessary with the electro-pneumatic system for at least three separate and distinct circuit faults to occur simultaneously before any such irregular point movement can occur; this is a contingency the probability of which may be considered extremely remote.

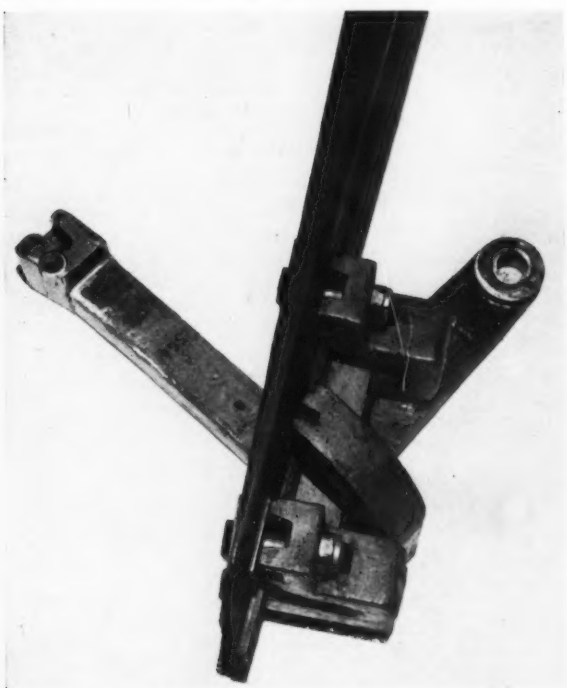
The drawing on page 740 shows how this principle has been applied in the case of the facing point lock under notice.

An air operated track lock is applied, as shown, at each chair mechanism and engages with the locking crank clutching the closed tongue and while this lock is engaged the crank cannot be moved to free the points for reversal.

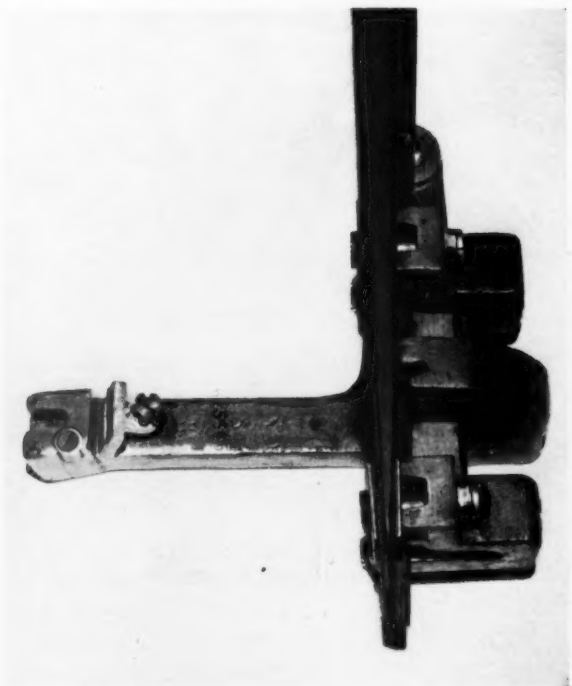
Each separate lock has its own detection contacts which are included in the relevant signal control circuits.

Departure from British Practice

This apparatus represents a departure from the principle so long followed on British railways of holding facing points by a central bolt, which in fact



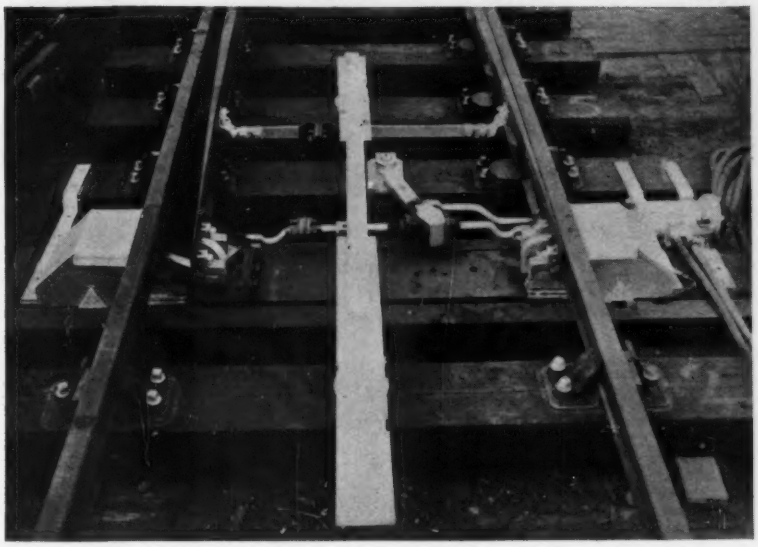
Switch locking arm in mid-position



Switch locking arm in closed locking position

registers their position with respect to the middle of the track, and replaces it by that of ensuring that closure to the stock rail is proved.

Its working, under the heavy traffic conditions obtaining at Earls Court, will be of considerable interest to signal engineers.



View of complete experimental layout in yard

Arresting an Earth Slip on Uxbridge Line

Rapid improvisation of emergency measures

DURING the weekend of December 4-5, London Transport carried out a large-scale operation near Uxbridge Station to arrest the movement of a large earth slip. Some 400 yd. east of the station the cutting is about 45 ft. deep and a surcharged concrete retaining wall up to 30 ft. high runs on a slight curve on the south side. The railway boundary fence is above and at a varying distance from the top of the wall, and a public footpath runs between the railway land and the gardens of houses.

Slight signs of earth movement had been under observation when suddenly, during the weekend of November 20-21, a cavity appeared in the public footpath and exposed the foundations at the corner of an adjacent house, and deep vertical cracks opened on the surface of the ground indicating an extensive slip. Early observations of movements of the bank, retaining wall and track formation indicated a slide on a cylindrical surface of a large mass of earth, including the whole of the retaining wall and the track formation for a distance of some 200 ft.

Immediate measures were taken to reduce the weight at the back of the wall by drag line excavation; the presence of adjacent property and of electric cables and telephone services in the footpath restricted the extent of the work. Planning was also begun for raising the tracks to load the toe of the slip where the tracks were rising considerably. Despite the earth movement, the wall was found tc be remaining nearly upright.

Preparations for insertion of concrete struts beneath tracks

Use of Concrete Struts

Concrete struts beneath the tracks bearing against the toe of the wall were inserted, beginning on November 26; their far ends were secured against concrete blocks and an existing retaining wall. Trenches for these struts were dug under the tracks during traffic, as well as during non-traffic hours at night.

Ready-mixed concrete was delivered by road and tipped by chute from the road bridge high above the line into wagons for transport and placing. A transverse joint of building board was inserted in each strut to allow some further movement of the retaining wall to take place without load on the struts while the concrete was hardening. Shortly after the placing of the first group of struts near the most rapidly moving part of the wall, the movement ceased; movement was then observed in a part of the wall which had been quiescent. Another group of struts was therefore constructed, again during traffic hours as well as at night, on December 1 and 2.

Reducing Weight of Moving Material

Meanwhile, excavation had been proceeding at the top to reduce the weight of moving material. The ground excavated was found to be a very soft yellow clay near the surface with some mixed filling material. Below the tracks the ground excavated for the struts was softened blue clay. Though the movement of the wall had been checked, it was

(*Continued on page* 746)

XUM

All-Welded Tipping Wagon

Lifting and lowering is operated hydraulically

The load being discharged through the centre doorway into a road vehicle

TESTS are being made in Federal Germany with a new type of all-welded tipping wagon. This wagon was developed by the German Federal Railway, in co-operation with Siegener Eisenbahn Bedarfs A.G. (S.E.A.G.), and constructed to U.I.C. requirements. The entire wagon body is lifted hydraulically off the underframe and tipped in either lateral direction by compressed air. The principal dimensions are as follow:—

Loading capacity	18·8 to 26 *tonnes*
Tare	12·5 *tonnes*
Body weight	4·3 ,,
Weight of lifting and tipping device	1·7 ,,
Length over buffers	9,500 mm.
Wheelbase	4,850 ,,
Loading length	7,760 ,,
Loading width	2,760 ,,
Side wall height	1,720 ,,
Lifting height of body	1,600 ,,
Floor height, lifted	1,300 ,,
Floor height, maximum	2,900 ,,
Tipping angle, maximum	50 deg.

The wagon, known as Hubkipper, is of the four-wheel type which may be worked on trains up to 50 m.p.h. Lifting and re-lowering is hydraulically operated by a lifting cylinder. Two more cylinders are provided for the tipping which can be arranged for in any lifting height desired. The power required for the cylinder operation (about 250 atmospheres), is generated by an electro-motor working on 220/380 V.; the current may be taken from any local power supply. Motor and oil pumps are mounted close to the lifting equipment. Two handles installed on the crib plate actuate the whole mechanism.

Construction Details

The peculiarity of the wagon requires the underframe and wagon body being constructed in separate units. The underframe deviates essentially from that of a normal open wagon. The centre part does not include crossbars as it lodges the lifting and tipping mechanism. Longitudinals are of channel steel which provides sufficient strength to absorb buffing loads. The wagon is equipped with a new type of KE brake including a charge-converter. Brake gear equipment is mounted to one longitudinal. Roller-bearings axleboxes are fitted together with laminated springs.

The body corresponds in its dimensions to those of the U.I.C. No. 1 type standard open wagon. The floor is capable of absorbing the forces accruing by the lifting and tipping operation. The body floor framing consists of two laterally fitted strong steel channels on to which steel plates are mounted forming the lateral section of the body floor; the floor is of timber planks. Adequate stiffness is provided to the body by a through-welded steel frame on top of the bodyside framing, and by strong ribs formed by the body crossbars and vertical stanchions.

Unloading

The wagon sides are divided in three sections, each of which is sub-divided in two flaps which are horizontally hinged to the upper and lower bodyside framing. The flaps are opened and shut hydraulically. The mechanism is operated from the crib plate by handles situated at one end of the wagon. The lower flap of the centre side wall section can be used as a bridge for orthodox loading or unloading from a side ramp.

Although the wagon employs special

(*Continued on page* 745)

The wagon in its lifted position before tipping

Radial Arm Drilling and Boring Machine

Automatic trip and indexing for drilling to predetermined depth

AMONG the machines developed recently by Fredk. Town & Sons Ltd., Halifax, is the AE4 type radial arm drilling, boring, tapping, and studding machine. The machine which is supplied in 4 ft. or 4 ft. 6 in. radius and in ranges of 1 ft. from 5 to 8 ft. radius will drill up to 2½ in. dia. from the solid in steel, and 3 in. in cast iron. It will also tap up to 1¼ in. Whitworth in steel, and bore up to 8 in. dia. in certain materials, with the lowest speed range.

The spindle is of forged high-carbon high-tensile steel, accurately ground, and carried in hardened steel sleeves, ensuring firm support when at maximum traverse. The spindle is six-spline form in the driving part, and mounted in phosphor bronze bushes with ball thrust bearings to take drilling loads.

Compensating Spring Device

The spindle and sleeve are balanced by a compensating spring device, giving easy and rapid hand traverse by means of a double handle in front of the saddle. The spindle end is bored to Morse taper, and its feed rack and pinion are of special steel. Access is provided to adjusting nuts for taking up end play in the thrust bearings.

Twelve speeds from 34 to 1,000 r.p.m. are obtained through heat-treated nickel chrome gears; speed ranges 23-670, 28-825, or 51 to 1,465 can be supplied as an alternative. Speeds are quickly changed by a lever and gate on the saddle. An index plate shows lever positions for drill dia. and corresponding speeds and feed when drilling mild steel and cast iron. Spindle operation is by a single lever electric switch adjacent to the speed change lever, and an ammeter, with overload indicator, is built into the front of the saddle. All gear shafts are six-splined and mounted in ball bearings.

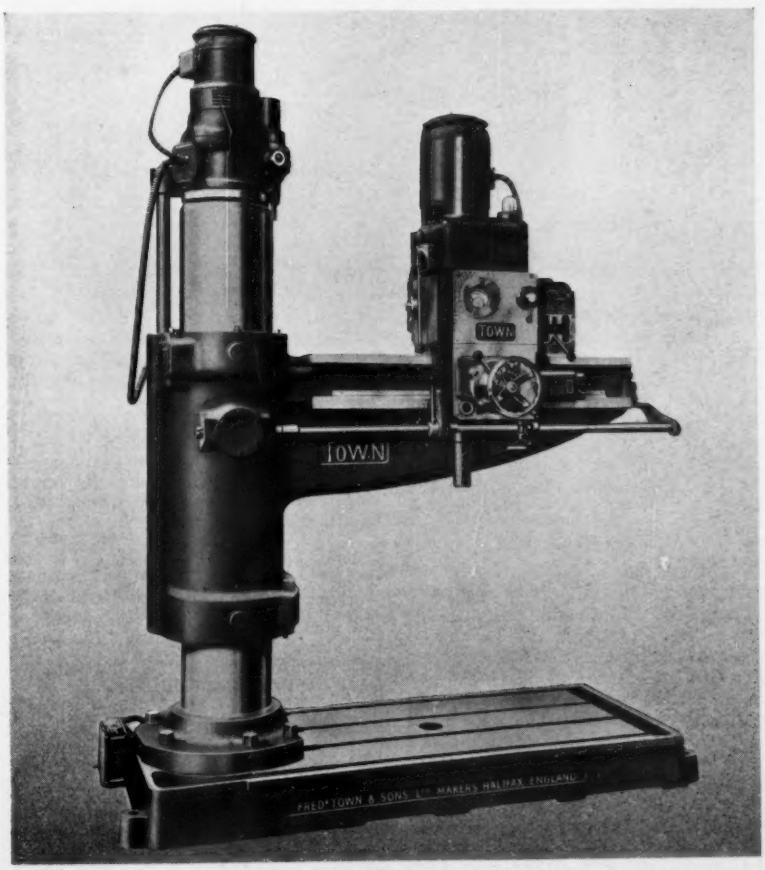
Four rates of automatic feed range from 70 to 180 cuts per in. are available, feed change is by a lever in front of the saddle, and an index plate shows the feed in use. An automatic trip with graduated index dial and adjustable table stop are provided for drilling to predetermined depth within the full 15 in. range of spindle traverse. A slipping clutch is incorporated in the feed drive which eliminates the possibility of damage through over traverse in each direction. Fine hand feed is by handwheel at the bottom of the saddle.

Motor Control

Drive is by a 5-h.p. constant-speed, rapid reversing motor mounted vertically at the top of the saddle, and coupled direct to a spindle through the gearbox. The motor is controlled by a lever gate switch on the saddle, operated through a contactor panel at the rear of the machine; a.c. or d.c. equipment can be supplied. The saddle, which is of box form, is carried on ball bearing rollers, and all mechanism is totally enclosed. Controls are all within easy reach of the operator. A special arrangement of ball bearing rollers fitted to the barrel portion of the arm ensures easy rotation.

Vertical traverse is effected by reversing motor on top of the column and a safety slipping device is fitted at the top of the elevating screw which, in conjunction with trip dogs, prevents over traversing. To indicate wear of the elevating nut a tell-tale nut is provided on the elevating screw. The column is ground to close limits, and the top box which carries the arm vertical traverse mechanism, slip rings and brush gear is carried on ball bearings and fitted with a torque bar to revolve the top box along the arm, a feature which prevents any stress on the elevating screw.

The baseplate is well ribbed and provided with the usual tee-slots, while provision is made for steady bushes for boring bars. Angle plates and a box bed can be supplied if required. Automatic pump lubrication with visual oil flow is provided, and the column top box gears run in an oil bath. Electrically driven suds pump and fittings are fitted as an extra.



AE4 type radial arm drilling machine with automatic trip and indexing

All-Welded Tipping Wagon

(*Concluded from page* 744)

equipment it may used for any kind of bulk goods. Front wall flaps provide for end tippler discharge, and the special lifting and side tipping device facilitates side discharge by gravity. The wagon body is slightly lifted only if the load is discharged on to rail-level ground or into deep bunkers beneath the rails. Tipping is carried out by unlocking the pivot bolts on one side below the body. Discharge time is two min. If the wagon load is discharged into road vehicles or at equal level, the body first is elevated in the horizontal position, and then tipped. Unloading into four five-*tonne* road vehicles takes 20 min. Part discharge is possible as the side flaps open individually. Orders have been placed for a further ten wagons of the same type.

XUM

Accommodation for "A" Shed Staff at Nine Elms

New building with improved washing, drying, and messing facilities

THE recently opened building at Nine Elms, Southern Region, for the Nine Elms "A" Shed staff affords messing, washing, and drying facilities for 264 men. These facilities are divided between ground and first floor, the former housing washing, lavatory, locker and drying rooms.

The whole of the first floor is taken up by a mess room and centrally placed kitchen, separated one from the other by metal and glass partitioning which makes for spaciousness, good ventilation, and adequate natural lighting.

Controlled Water Temperature

The ablutions on the ground floor are fitted, as illustrated, with two 54-in. quick-sprays with a controlled temperature for the water supply.

Tubular drying racks for hats, coats, and shoes are provided for the drying room. A 15-in. cubic locker is provided for each member of the shed staff in the locker room, whilst pegs are fitted as necessary.

The whole of the lobby is centrally heated from a separate boiler house which also serves the adjoining staff canteen.

(Left) Quick-spray with controlled water temperature; (right) interior of mess room, showing metal and glass partitions and method of lighting

Arresting an Earth Slip on Uxbridge Line

(*Concluded from page* 743)

considered advisable to carry on with the scheme for stone pitching with a 4 ft. raising of the tracks to load the toe of the slip. Granite pitching and limestone ballast were already being conveyed by rail from Leicestershire and Somerset. The large raising on stone pitching required the permanent way to be removed; normal traffic was therefore suspended between Uxbridge and Hillingdon from late on the night of December 3 until normal commencing time on the morning of December 6, giving a total engineering possession of 57 hr.

During this time the two passenger tracks were raised by 4 ft. for a length of 60 yd. with a run-out of this lift at the ends over a combined length of 340 yd., and the third track was lifted to suit the new level of the adjacent passenger roads. The tracks were removed one at a time by crane and 1,800 tons of granite and 2,000 tons of limestone ballast were unloaded by hand, some 400 permanent way men being employed. Limitations of time and space prevented the employment of mechanical unloading plant. During the week-end, a converted six-car passenger train was stabled in an adjacent siding to provide temporary accommodation for the staff and as a control office.

Planning Track Lift

The organisation of this track lift at short notice, including timing of arrival, stabling, unloading and despatch of wagons and material, called for a special planning effort. Complications were the flooding of some quarries from which stone was ordered and the congestion of loaded wagons in some areas due to the effect of gale conditions on the ports.

This track raising would have buried a line of 32 h.t. and signal cables attached to the lower part of the wall. The lifting of these into a temporary wooden troughing, together with incidental work to signals and track circuits, was in itself a work of some magnitude. Despite all difficulties, and aided by a fine weekend, the whole operation was completed within the scheduled time.

RANSOME & MARLES FACTORY EXTENSION.—An agreement has been signed between the North Eastern Trading Estates Limited, Co. Durham and Ransome & Marles Bearing Co. Ltd., for an extension to the firm's factory at Annfield Plain. The factory, which was opened in 1953, cannot deal with the increased production necessary to fulfil commitments.

CONSOLIDATED PNEUMATIC SERVICE IN WEST AFRICA.—Civil engineering mining, and other interests operating in British West African territories, are provided with an immediate plant and equipment service as a result of new appointments announced by Consolidated Pneumatic Tool Co. Ltd., 232, Dawes Road, London, S.W.6. Representation for the full range of the company's compressed-air products has been arranged with the United Africa Co. Ltd., Unilever House, London, E.C.4, with offices at Accra, Takoradi, Kumasi, Kaduna, Lagos and Enugu.

RAILWAY NEWS SECTION

PERSONAL

Mr. Neal McCusker, Assistant Secretary (Finance & Operations), New South Wales Government Railways, has been appointed Deputy Commissioner for Railways in New South Wales following the leave of absence which has been granted for a period of three months, owing to ill-health, to the Commissioner for Railways, Mr. R. Winsor.

Mr. F. S. Whalley

Directorships relinquished of Vulcan Foundry and Robert Stephenson & Hawthorns

Mr. W. P. Allen

Appointed Manpower Adviser, British Transport Commission

Mr. Frederick Seymour Whalley, M.C., M.I.Mech.E., M.I.Loco.E., who, as recorded in our December 24 issue, is resigning from the boards of the Vulcan Foundry Limited and of Robert Stephenson & Hawthorns Limited, was born on May 1, 1885, and was educated at the King's School, Canterbury, and the City & Guilds Central Technical College, London. After practical training in the locomotive works of the Vulcan Foundry Limited, and subsequently in the Running Department of the London & South Western Railway, Eastleigh, he was appointed in 1910 an Assistant Locomotive Superintendent, Indian State Railways, and was posted to the North Western Railway. In 1914, he was acting as Secretary to the Locomotive & Carriage Superintendents' Committee, Indian Railway Conference Association, but at the outbreak of war he accompanied Indian Expeditionary Force "B" overseas with a commission in the Royal Engineers, serving with the Railway Corps in East Africa. He was mentioned twice in despatches, awarded the Military Cross, and promoted Major; and ultimately held the position of Chief Mechanical Engineer, East African Military Railways. On reversion from military duty he returned to India in 1921 as District Locomotive Superintendent, N.W.R. In 1923, Mr. Whalley relinquished his appointment in India to become General Manager of the Vulcan Foundry Limited, of which company he was appointed Managing Director in 1929, Vice-Chairman in 1941, and Chairman in 1946. He was elected President of the Manchester & District Engineering Employers' Association in 1931, and was re-elected for 1932 and 1933, and President of the Locomotive Manufacturers' Association in 1936, holding that office until 1947. In 1940, he was appointed Chairman of the Locomotive Manufacturers' Export Group, and, in 1942, Chairman of the newly-formed Railway Engineering Supply Industries Joint Committee. From 1941 to 1945, he was a Director of the North British Locomotive Co. Ltd., and, in 1944, he was elected Chairman of Robert Stephenson & Hawthorns Limited. Mr. Whalley was President of the Institution of Locomotive Engineers for 1946–47. He relinquished the Chairmanship of the Vulcan Foundry and of Robert Stephenson & Hawthorns Limited in 1951.

Mr. M. Arnet Robinson, Managing Director of Coast Lines Limited, has been elected Chairman of the Mersey Docks & Harbour Board.

Mr. William Philip Allen, Chief of Establishment & Staff, British Transport Commission, who, as recorded in our December 10 issue, has been appointed to the General Staff of the Commission as Manpower Adviser, joined the former Great Northern Railway as an engine cleaner at the Hornsey Depot in 1907. He became a fireman in 1913 and, in 1924, was promoted to engine driver. He joined the Associated Society of Locomotive Engineers and Firemen in 1912 and was Assistant Secretary of the Hornsey Branch from 1913 to 1921, and Secretary from 1921 to 1927. He was a member of the Executive Committee from 1927 to 1933, and President for the years 1930, 1932, and 1933. In 1933 he was elected Organising Secretary, and he became Assistant General Secretary in 1936, and General Secretary on January 1, 1940. He was a member of the National Wages Board from 1929 to 1933. He was awarded the C.B.E. in 1947. In 1944 Mr. Allen was appointed a member of a committee set up by the Government to inquire into the relation, both in industrial and non-industrial cases, between claims to security benefit and claims for damages in respect of personal injury caused by negligence; and to review the law governing the liability of employers to pay damages or compensation for industrial injury independently of the Workmen's Compensation Acts. In 1945 he was appointed a member of the War Damage Commission. In September, 1947, he accepted the Minister of Transport's

invitation to become a full-time Member of the Railway Executive, and, on the abolition of the Railway Executive in October, 1953, he was appointed Chief of Establishment & Staff, British Transport Commission. In May, 1953, he was appointed by the Minister of National Insurance a member of a committee set up to review the present provisions of the National Insurance (Industrial Injuries) Act under which benefit is paid for diseases and for personal injuries not caused by accident. On October 28, 1948, Pacific Locomotive No. 60114, the first of British Railways Class "A1," was named after Mr. Allen by Sir Eustace Missenden, O.B.E., then Chairman of the Railway Executive, at a ceremony at Kings Cross.

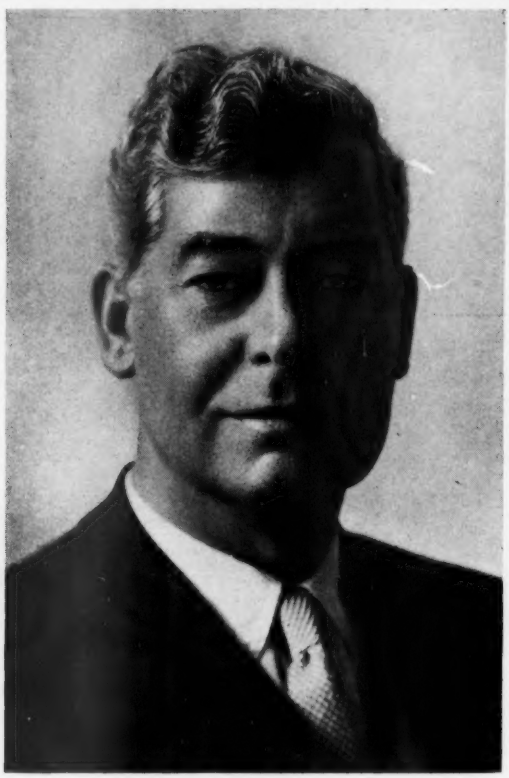
Mr. J. Ratter, C.B.E., B.Sc., M.Inst.C.E., Chief Officer (Civil Engineering), British Transport Commission, who, as recorded in our December 10 issue, has been appointed to the General Staff of the Commission as Technical Adviser, was educated at St. Peter's School, York, and at Durham University. He began his railway career in 1929, as a pupil of the late Mr. John Miller, then Engineer, North Eastern Area, L.N.E.R., and, after holding several appointments with that company, joined the L.P.T.B. in 1936 as an assistant in the Permanent Way Department. In 1938, he returned to the L.N.E.R. as Assistant District Engineer, Sheffield. Mr. Ratter served throughout the war with the Royal Engineers in France, Africa, and Italy, also in the War Office. He became Deputy Director of Transportation, C.M.F., with the rank of Colonel, and with the responsibility for railway reconstruction in the Italian campaign. He was mentioned in despatches in 1942, awarded the O.B.E. and Legion of Merit (U.S.A.) in 1944 and C.B.E. in 1945. On demobilisation he rejoined the L.N.E.R. and was appointed District Engineer, Guide Bridge; in 1946 he became Permanent Way Assistant to the Engineer, Kings Cross. Mr. Ratter joined the L.P.T.B. in 1947 as Civil Engineer (Maintenance), with responsibility for maintenance of all railway and tram permanent way, and all rail and road service properties of the Board. He was appointed Chief Officer, Engineering (Works), Railway Executive Headquarters in 1951, and, in October, 1953, under the interim railway reorganisation following the Transport Act, 1953, he became Chief Officer (Civil Engineering), British Transport Commission. Since that time he has been Chairman of the Civil Engineering Committee.

At a meeting of the Council of the British Iron & Steel Federation held on December 21, Mr. A. G. Stewart, Chairman & General Managing Director of Stewarts & Lloyds Limited, was appointed President of the British Iron & Steel Federation as from January 1, 1955, in succession to Mr. G. H. Latham, Chairman & Managing Director of Whitehead Iron & Steel Co. Ltd.

Sir Ernest Lever, Chairman & Chief Executive of Richard Thomas & Baldwins Limited and the Steel Company of Wales Limited, was appointed President Elect of the Federation.

Mr. J. H. Brebner, O.B.E., F.R.S.A. Chief Public Relations & Publicity Officer to the British Transport Commission, who, as recorded in our December 10 issue, has been appointed Public Relations Adviser to the British Transport Commission, will also, in addition to his existing duties, become a member of the Commission's General Staff as from January 1, 1955. Mr. Brebner was associated in 1929, with Sir Kingsley Wood, then Postmaster-General, in popularising the Post Office services, and, for his work, he was awarded the M.B.E. In 1937, he was appointed a member of the official committee for the creation of the Ministry of Information, and designated Director, News Division, a position he held under seven Ministers. For his services in this capacity he was awarded the O.B.E. From 1943, until the end of the war, in addition to his duties as Director, News Division, Ministry of Information, he was engaged on special missions, many overseas. In early 1943, he became Adviser to the Minister of State, Middle East, and, during his stay at Cairo, he arranged Press conferences for Mr. Churchill and other Ministers, newspapers for the Forces, and a home news service for desert troops. He was also appointed by the Minister of State as the head of an Anglo-American Mission to General Eisenhower. In 1944, he was placed in charge of Press relations in connection with the King's visit to his troops in Italy. In the same year he was appointed Executive Chairman of the Anglo-American Committee which organised successfully the distribution of news describing the landings in France on D-Day. In 1944, Mr. Brebner

Mr. J. Ratter
Appointed Technical Adviser,
British Transport Commission



Mr. J. H. Brebner
Appointed Public Relations Adviser,
British Transport Commission

Mr. S. H. Gould

Appointed Assistant Operating Superintendent, London Midland Region

Mr. H. W. Howard

Assistant (Claims & Salvage) to Commercial Superintendent, Western Region, 1949-54

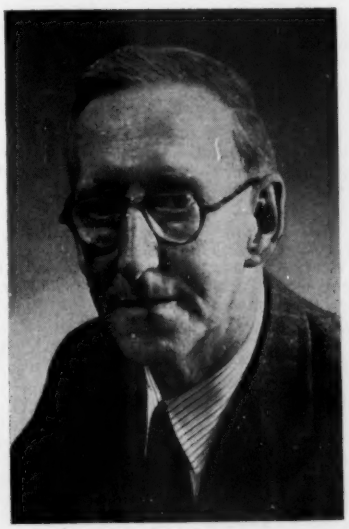
Mr. Norman S. Taylor

Appointed Assistant (Claims & Salvage) to Commercial Superintendent, Western Region

became the first United Kingdom Press Officer in charge of Press relations of the Imperial Prime Ministers' Conference. For his work on behalf of the Allied Press, the American Government awarded him the Medal of Freedom with Bronze Palms. He has also received the Freedom of the City of London. Mr. Brebner joined the L.P.T.B. as Chief Public Relations & Publicity Officer, in January, 1946, and, in 1947, he became Chief Public Relations & Publicity Officer to the British Transport Commission.

Mr. S. H. Gould, Assistant (Passenger Services) to Operating Superintendent, London Midland Region, British Railways, who, as recorded in our December 17 issue, has been appointed Assistant Operating Superintendent, London Midland Region, began his railway career on the former L.N.W.R. at Watford in 1917. After service with H.M. Forces during the 1914-18 war he rejoined the railway service. In 1924 he was attached to the staff of the Chief General Superintendent, L.M.S., and held positions at Lancaster and Preston. Two years later he joined the District Controller's staff at Birmingham and, in 1929, became Assistant District Controller, Nuneaton. After holding similar positions at Patricroft and Willesden in 1930 and 1931 respectively Mr. Gould took charge of the Euston sub-office of the Divisional Superintendent of Operation (Western Division) in 1934. He became Assistant Divisional Controller (Passenger Services), Crewe, in 1936 and, after three years in that position, was appointed Divisional Controller, Crewe. Mr. Gould became Chief of Divisional Trains Office, Crewe, in 1944, was appointed Assistant, Passenger Services, Chief Operating Manager's Office in 1946, and redesignated Assistant (Passenger Services) to Operating Superintendent in 1948 under the British Railways organisation.

Mr. H. W. Howard, M.Inst.T., Assistant (Claims & Salvage) to Commercial Superintendent, Western Region, British Railways, who, as recorded in our December 24 issue, has retired, has completed 49 years of railway service. He joined the Great Western Railway at Paddington Goods Station in 1905, and gained general experience there and at South Lambeth until 1922, when he was transferred to the Staff section of the Chief Goods Manager's Office, dealing with Sectional Council, Bonus arrangements and other special subjects. In 1926 he became Chief Staff Clerk to the District Goods Manager, Bristol, returning in 1931 to the Development Section of the Chief Goods Manager's Office, on various duties associated with containers, removals, railheads and road competition. For two years



Mr. H. Haigh

Secretary, Railway Convalescent Homes, who retires today

Mr. M. Pearson

Appointed Secretary of the Railway Convalescent Homes

The late Mr. H. C. R. Calver

Stationmaster, Liverpool Street, L.N.E.R., 1930-40

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he was outdoor representative. After serving at South Lambeth as Chief Clerk during 1939, Mr. Howard was appointed Chief Representative to the District Goods Manager, London, and, in 1941, undertook duties of a specialised character in the Chief Goods Manager's Office. Appointed Assistant District Goods Manager, Bristol, in 1944, and Goods Agent, South Lambeth, in 1946, he became Goods Superintendent at Paddington in October of that year and was appointed Claims & Salvage Agent in 1949. Mr. Howard gained the Brunel Medal at the London School of Economics in 1922, became an Associate Member of the Institute of Transport, by examination, in 1928, and a Member in 1942. On October 1 this year he became a member of the Council of the Institute. Throughout his service he took a keen interest in the study of railway subjects and for many years was lecturer for the course of Goods Station Working.

Mr. Norman S. Taylor, A.C.I.S., M.Inst.T., Traffic Costing Officer, Western Region, British Railways, who, as recorded in our December 24 issue, has been appointed Assistant (Claims & Salvage) to the Commercial Superintendent, joined the Great Western Railway at Plymouth in 1922, being transferred in 1935 to the Development Section of the Chief Goods Manager's Office. In 1942 he was seconded for outdoor duties in connection with terminal working, rolling stock and bonus matters. Two years later, with the formation of the Post-War Planning Section, he became its Chief Clerk and was responsible for the development of Zonal Collection and Delivery Schemes, being Chairman of the Inter-Company Sub-Committee dealing with that subject; he was also Chairman of the Great Western-Southern Railway Working Committees concerned with the co-ordination of freight facilities at Reading, Exeter, and Salisbury. With the formation of the Railway Executive, Mr. Taylor was appointed Assistant to the Executive Officer (Special Duties), and was engaged on the co-ordination of railway facilities (freight and parcels) in the London Area. In August, 1953, he became a Traffic Costing Officer, the position he now vacates. In 1951, Mr. Taylor received the British Transport Commission award for a paper entitled "Some London Freight Problems." He is on the Council of the Institute of Transport and is the immediate past Chairman of the Berks, Bucks and Oxon Section. He is also an Associate of the Institute of Taxation.

Mr. H. Haigh, M.B.E., F.C.I.S., Secretary of the Railway Convalescent Homes, who is retiring today, has completed 21 years of service to the Homes. Mr. Haigh, who was appointed to the then newly-created position of Assistant Secretary to the Railway Convalescent Homes in 1931, brought to his position wide administrative experience in important positions with a number of commercial houses. In addition he proved to be particularly successful as a lecturer on commercial subjects at Bradford Technical College and also for a period during which he took charge of the Department of Commerce & Foreign Languages at Leicester College of Technology. Six years before his appointment with the Railway Convalescent Homes, Mr. Haigh passed the final examination of the Chartered Institute of Secretaries, being awarded first place in the examination list, the "Sir Ernest Clark" prize, and, in addition, a special certificate for exceptional merit. He was elected a Fellow of the Institute in 1928. In recognition of his work in improving the efficiency and stability of the Homes he was awarded the M.B.E. in 1952.

Mr. M. Pearson, A.C.I.S., Assistant Secretary of the Railway Convalescent Homes, who will succeed Mr. H. Haigh as Secretary, joined the headquarters staff of the Homes in 1947. He was appointed Assistant Secretary on February 1, 1950. Mr. Pearson was educated at the Robert Richardson Grammar School, Ryhope, Co. Durham, and commenced his career at the age of 17, first in a large ship-owning company and subsequently in the office of a large wholesale food distributing company on the north-east coast. He passed the examinations of the Chartered Institute of Secretaries, the Intermediate in 1936 (prize-winner), and the Final, at the age of 23, in 1938. During the war, Mr. Pearson served as Warrant Officer, Class I with the R.A.S.C., spending two years in Sierra Leone, West Africa, where he was Chief Clerk to the Commander of the Army Supply & Transport organisation.

The late Mr. Hubert Christopher Randolph Calver, Stationmaster, Liverpool Street, London & North Eastern Railway from 1930 to 1940, whose death at the age of 74 was recorded in our December 24 issue, was educated at Ridenhall Grammar School, near Harleston. He began his railway career on the former Great Eastern Railway as a junior clerk in Stowmarket goods office in 1894, and served as a clerk at various places in East Anglia until 1907, when he was placed on the Ipswich Relief staff. He subsequently acted as Stationmaster at 94 stations in East Anglia, and, in 1917, he was appointed Assistant Stationmaster at Liverpool Street. For a period he served on the Superintendent's headquarters staff, and, in 1926, he became Stationmaster at Northallerton. In 1928, he transferred to Norwich (Thorpe) in a similar capacity, and, in July, 1930, he became Stationmaster at Liverpool Street. In the course of his career Mr. Calver received many foreign Royalties and notable personalities, and, in 1937, the Belgian decoration of Chevalier of the Order of King Leopold was conferred on him. He was a Life Governor of two hospitals and a member of the Board of Management of the United Kingdom Railway Officers' & Servants' Association.

Mr. A. R. Dunbar, M.B.E., who, as recently recorded, has left the position of Divisional Operating Superintendent, Eastern Division, Eastern Region, British Railways, to take up the appointment of Assistant Chief Regional Manager, North Eastern Region, has relinquished the Presidency of the Eastern Region Staff Railway Society, which he has held since the Society's foundation in April, 1952.

Mr. G. Fernyhough, T.D., who has been appointed Operating Manager (Country Buses & Coaches), London Transport Executive, in succession to Mr. B. H. Harbour, recently appointed a Member of the Executive, is 44. He joined the service of the former London General Omnibus Company in 1930, transferred to the Country Buses & Coaches Department in 1935 as an Assistant District Superintendent, and was made a District Superintendent in 1937. During the war he served in H.M. Forces and, on demobilisation, held the rank of Lt.-Colonel. From January to July, 1946, he was District Superintendent (North) in the Country Area, and, in July, 1946, was appointed an Assistant Divisional Superintendent in the Central Area. In 1949 Mr. Fernyhough was made responsible for the formation and initial operation of the Central Distribution Service (Freight) in the department of the Chief Supplies Officer. He was appointed Divisional Superintendent (North) in 1951 and became responsible for the north-east, north, and north-west districts of the Country Area. For a short period in 1946 Mr. Fernyhough was loaned to the Anglo-Iranian Oil Company to advise on the organisation and operation of passenger transport services in Abadan.

Sir Ernest Lemon

Mr. F. A. Pope, Member of the British Transport Commission, in a tribute to Sir Ernest Lemon published in *The Times* of December 23, writes:—

Sir Ernest Lemon had a profound influence on the management of the London, Midland and Scottish Railway between the wars. He had a restless and creative mind and immense energy. After a brilliantly successful period in the mechanical engineering departments of the company he applied himself to improving the operating and commercial sides of the business. His general approach to a phase of the work that might involve an expenditure of millions of pounds a year, was to get every detail set down in black and white, and then to examine the results with "Why?" constantly on his lips. He accepted nothing on face value, and he was not a comfortable person to be with at any time. But he got results.

For instance, he saw that a great improvement in net revenue would come by increasing locomotive availability for traffic purposes. He therefore reorganised the motive power department in order to secure this and as a consequence made large savings in the number of locomotives required and in the staff costs. Another example is the stimulus he gave from 1933 onwards to the modernisation of goods terminals, which changed all previous ideas in regard to the working of goods stations. He was always ready with ideas of all kinds; some of them were impracticable or fantastic but in the process of examining them the people doing so were stimulated to produce ideas of their own.

He was a fine chairman of committees, generally working on the principle that members should go back afterwards and put their own recommendations into effect. Nothing could be done quickly enough for him, and he exerted relentless pressure on the officers responsible for work that was receiving his attention. However painful the process was, he succeeded in vitalising people and departments and his work will always be remembered by those in the railway service in his time, and the energetic influence he exerted.

Mr. Martin James, I.C.I. Limited, Nobel Division, 460, Sauchiehall Street, Glasgow, C.2, and Mr. Natwar Mulchand Parekh, Tata Locomotive & Engineering Co. Ltd., Telco Works, Jamshedpur 4, Bihar, India, have been elected Associate Members of the Institution of Mechanical Engineers.

Mr. W. G. Thorpe, District Operating Superintendent, Hull, North Eastern Region, British Railways, has been appointed to a similar position at Nottingham Victoria, London Midland Region.

We regret to record the death on December 20, at the age of 79, of Mr. Duncan W. Fraser, Chairman of the American Locomotive Company, 1945-54.

Mr. J. E. Hollands, A.M.Inst.T., until recently Rolling Stock Engineer to the Birmingham & Midlands Motor Omnibus Co. Ltd., has been appointed Chief Engineer to the North Western Road Car Co. Ltd., succeeding Mr. S. J. B. Skyrme, who has been appointed General Manager of East Midland Motor Services Limited.

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BRITISH TRANSPORT COMMISSION AREA BOARDS

The British Transport Commission has appointed the following Chairmen and Members of the Area Boards.

Scottish Area Board

Sir Ian Bolton, Bt., O.B.E. (Chairman) West Plean, Stirling	Member of the Commission
The Rt. Hon. Lord Bilsland, M.C. 89, West Campbell Street, Glasgow, C.2	Chairman, Bilsland Bros. Director, Bank of Scotland, Burmah Oil Co. Ltd., and John Brown & Co. Ltd. Chairman, Executive Committee, Scottish Council (Development and Industry)
D. H. Cameron of Lochiel, Esq., T.D. Achnacarry, Spean Bridge, Inverness-shire	Member of the Commission
J. C. Denholm, Esq., C.B.E. Glendower, Skelmorlie, Ayrshire	Partner in J. & J. Denholm, Shipowners, Glasgow Director, David MacBrayne Ltd. President, Chamber of Shipping of the United Kingdom, 1954
Councillor Peter L. Meldrum 130, Mossgiel Road, Glasgow, S.3	Deputy Chairman of Glasgow Corporation Chairman of Clyde Valley Regional Planning Advisory Committee
Sir Hugh Rose, Bt. .. 14, Mortonhall Road, Edinburgh	Chairman, Scottish Provident Institution Director, Union Bank of Scotland
W. G. N. Walker, Esq. .. Jute Industries Limited, Meadow Place Buildings, Dundee	Chairman, Jute Industries Ltd. Director, Dundee Perth & London Shipping Co. Ltd. Member of Scottish Board for Industry

North Eastern Area Board

T. H. Summerson, Esq. (Chairman) Mowden Hall, Darlington	Chairman, Thomas Summerson & Sons Ltd. Hon. Vice-President, Association of British Chambers of Commerce
Dr. James W. Armit .. 85, Junction Road, Norton-on-Tees, County Durham	Member of Tees Conservancy Commission, and of Tees-side Chamber of Commerce Formerly with Imperial Chemical Industries Limited, Wilton, North Yorkshire
Sir John Benstead, C.B.E. .. 114, Lincoln Road, Peterborough	Member of the Commission
Sir Mark Hodgson, O.B.E. 31, Kenton Road, Gosforth, Newcastle-upon-Tyne, 3	Ex-President, Confederation of Shipbuilding & Engineering Unions Chairman, National Savings Committee, Northern Region
G. H. Kitson, Esq., O.B.E. Heron Court, Linton, near Wetherby, Yorkshire	Member of Council and Past President, Leeds Chamber of Commerce Director, Leeds Permanent Building Society
P. D. Priestman, Esq. .. Priestman Bros. Ltd., Holderness Engineering Works, Hull	Managing Director, Priestman Bros. Ltd. President, Hull Chamber of Commerce Director, Century Insurance Co.

Eastern Area Board

Sir Reginald Wilson (Chairman) 13, Gloucester Square, London, W.2	Member of the Commission
Sir Edmund Bacon, Bart. O.B.E., T.D. Norwich	H.M. Lieutenant of Norfolk Chairman, Eastern Counties Committee of Lloyds Bank Limited
A. F. Pegler, Esq. .. White Lodge, Rampton, Retford, Notts.	Vice-Chairman, Northern Rubber Co. Ltd.
Jack Tanner, Esq. .. 7, Scutari Road, East Dulwich, S.E.22	Ex-President, Amalgamated Engineering Union Member of Committee of Inquiry into Electricity Industry
The Rt. Hon. H. U. Willink Magdalene College, Cambridge	Master of Magdalene College, Cambridge

Southern Area Board

Sir Philip Warter (Chairman) 8, Lees Place, Grosvenor Square, W.1	Chairman, Associated British Picture Corporation Limited. Chairman, British & Foreign Wharf Co. Ltd.
J. E. Binks, Esq. .. 8, Ormond Avenue, Hampton, Middlesex	Ex-President, National Union of Railwaymen
H. F. B. Iles, Esq. .. Hamilton Lodge, Bishops Avenue, Broadstairs	Chairman, Margate Estates Co. Ltd. Chairman, Belle Vue (Manchester) Ltd.
H. L. R. Matthews, Esq., C.B.E. 35, Bucklersbury, E.C.4	Chartered Surveyor-Consultant Director, Lloyds Bank Limited. Director, Abbey National Building Society
K. Preston, Esq. .. Oceanic House, 1A, Cockspur Street, S.W.1	Chairman & Managing Director, J. Stone & Co. (Holdings) Ltd. Director, Midland Bank Ltd. Director, W. & T. Avery Ltd.
A. B. B. Valentine, Esq. .. 34, Southway, N.W.11	Member of the Commission

Western Area Board

Sir Herbert Merrett (Chairman) Cory's Buildings, Cardiff	Chairman, Cory Bros. & Co. Ltd. Powell Duffryn Limited, etc., Formerly part-time Member of the Railway Executive
Arthur Chamberlain, Esq., M.C., T.D. 62, Wellington Road, Edgbaston, Birmingham	Director, Tube Investments Limited Managing Director, Hercules Cycle & Motor Co. Ltd.
Alderman F. A. Parish, C.B.E. 141, Hotwell Road, Bristol, 8	Chairman, Bristol Dock Labour Board
Sir John Carew Pole, D.S.O., T.D., V.L. Antony House, Torpoint, Cornwall	Chairman, Cornwall County Council Director of Lloyds Bank (Devon & Cornwall Committee)
John Ryan, Esq., C.B.E., M.C. Westbury, Westbury Road, Ealing, W.5	Member of the Commission
Captain Hugh Vivian .. Chantry Acre, Bishopston, Swansea	Former Chairman of Beyer Peacock & Co. Ltd. Director, Associated Electrical Industries Limited, etc.

London Midland Area Board

The Rt. Hon. Lord Rusholme (Chairman) Rusholme Gardens, Manchester, 14	Member of the Commission
Leonard Cooke, Esq., O.B.E. Co-operative Wholesale Society Limited, Manchester, 4	Vice-President, Co-operative Wholesale Society Limited
Sir Francis Glyn, K.C.M.G. 67, Lombard Street, E.C.3	Chairman & Managing Director, Glyn Mills & Company
Major-General Sir John Kennedy Temple Sowerby Manor, Penrith, Cumberland	Governor of Southern Rhodesia from 1946 to 1954
Sir Basil McFarland, Bart. Aberfoyle, Londonderry, Northern Ireland	Director, Belfast Banking Co. Local Director, Commercial Union Assurance Co. Ltd.
R. F. Summers, Esq. .. John Summers & Sons Ltd., Shotton, Chester	Chairman, John Summers & Sons Director of United Steel Companies Ltd.; District Bank Ltd.; Royal Insurance Co. Ltd.

In some cases, full-time Members of the Commission have been appointed to the Chairmanship of these Boards. This is simply a matter of convenience at the present time and not of policy.

The Boards will be set up on January 1, and on February 1 will begin to exercise the functions delegated to them by Article 5 of the B.T.C. (Organisation) Scheme Order, 1954.

The Commission has left the Boards to decide where they will meet and their procedure for conducting business.

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Ornamental Lineside Shrubs and Bushes

Topiary work on British Railways

On the Cholsey to Wallingford branch, Western Region, showing Lengthman Gardner with the horse and rider clipped by him

Reference was made in a recent issue of *The Manchester Guardian* to the bushes clipped into ornamental shapes along the Western Region main line from Goring, past Cholsey, as far as Didcot. The small hawthorn bushes on the grass verge have been clipped into spheres or cylinders or large-tailed birds. Years ago, the paper states, there was an aeroplane but this seemed to have disappeared. "Either the bush has become unrecognisably corpulent or it was cut down—perhaps because it was a biplane of what is now a very obsolete type.

"Most of them were here at least 30 years ago, but they may well be older. Who maintains them? A friendly railwayman, who deplored the absence of the well-remembered aeroplane, could only say that they must be clipped regularly by the chaps working on the permanent way. Is there any other stretch of railway line so decorated?"

Commenting on this, Mr. C. J. Rider, Public Relations & Publicity Officer of the Western Region, has stated: "It is not known when these bushes were originally planted but we do know they have been in existence since before 1914. They are regularly clipped and, at present, the work is performed by Lengthman Cooling, who takes a great interest in them.

"The aeroplane is still there, although it has become slightly top heavy, mainly owing to the roots spreading on the slope. Arrangements are being made to strut the tree to make it more easily recognisable from passing trains.

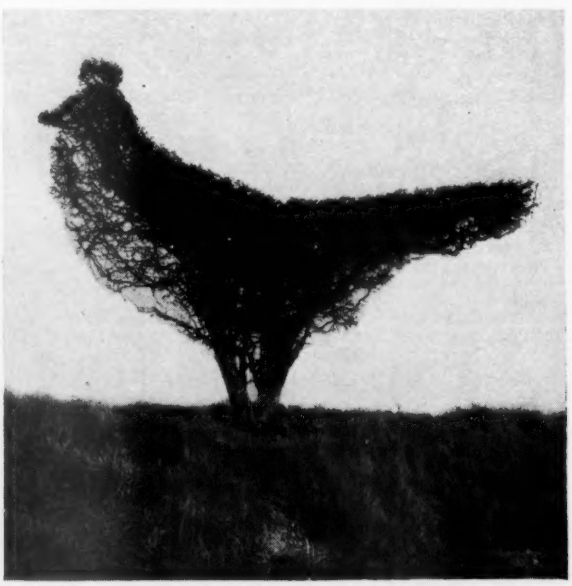
"We do not know of any other stretch of line where a number of bushes are kept trimmed in this way but there are other isolated cases. Another good specimen is on our Wallingford branch depicting a man on horseback, and this is kept by Lengthman Gardner.

"These bushes are hawthorn and, therefore, all the more credit is due to the two men who take such an interest and keep them trimmed, since it is far more difficult to fashion than box or yew."

On the M.R. Manchester Main Line

A correspondent has pointed out in *The Manchester Guardian* that on the former Midland (now London Midland Region) Manchester-Derby main line, between Great Longstone and Bakewell, there are hawthorn bushes which have been cut to the shape of sheep, a shepherd, a settee, a round table, and a fox. He believes these to have been in existence since the early 1870s.

BRITISH INSULATED CALLENDER'S CONSTRUCTION CO. LTD. MIDDLESBROUGH OFFICE.—British Insulated Callender's Construction Co. Ltd. announces that the address of the company's Middlesbrough District Office is now 55-57, Borough Road, Middlesbrough, telephone 43644.



(Left) The aeroplane near Didcot and (right) bird near Cholsey, on the Western Region main line, some of the bushes kept clipped by Lengthman Cooling

Parliamentary Notes

B.T.C. Borrowing Powers

Mr. John Boyd-Carpenter (Minister of Transport & Civil Aviation) presented to the House of Commons on December 14 the Transport (Borrowing Powers) Bill, which was formally read the first time.

The purpose of the Bill is to increase the borrowing powers of the B.T.C. The aggregate amount which it, with the consent of the Minister of Transport & Civil Aviation and the approval of the Treasury, may borrow temporarily or by the issue of British Transport Stock to meet its capital needs is limited by Section 26 of the Transport Act, 1953, to a maximum of £275,000,000 outstanding at any one time. The Bill increases that limit to £600,000,000. The Commission has stated that the additional borrowing powers are needed to enable it to continue its development programme. Some £250,000,000 has been borrowed already.

Questions in Parliament

Railway Workers Rent Allowance

Mrs. Lena Jeger (Holborn & St. Pancras S.—Lab.) on December 15 asked the Minister of Transport & Civil Aviation what instructions he proposed to issue to the B.T.C. regarding the rent allowance of railway workers in the London area who are so adversely affected by rent increases, in some cases of 20 per cent, which are being imposed, under the Housing Repairs & Rents Act, by the B.T.C. on its tied accommodation.

Mr. John Boyd-Carpenter wrote in reply: None. The Act provides for the protection of tenants against unreasonable charges.

Staff & Labour Matters

Railway Wages

The executive of the National Union of Railwaymen decided on December 21, after it had considered the reply sent on December 20 by Mr. John Boyd-Carpenter, Minister of Transport & Civil Aviation, to the representations made to him on behalf of the N.U.R. on December 13, to call a strike from midnight on January 9.

The union asserted that it had exhausted all the available means of negotiation and was determined to obtain the balance of the increase of 15 per cent in wages originally claimed in 1953.

The terms required by the N.U.R. for cancellation of the strike are the immediate re-opening of negotiations with the British Transport Commission with an assurance that the whole of its demands will be met quickly. The strike would involve all N.U.R. members except some 11,000 employees of bus companies.

On December 22 Mr. Boyd-Carpenter attended two Cabinet meetings, at which it is understood that the N.U.R. strike threat was discussed. He also saw Sir Brian Robertson, Chairman of the Commission.

N.U.R. "Ultimatum"

In a statement the Commission pointed out that it regarded "the ultimatum of the N.U.R. executive as completely misconceived," and pointed out the seriousness of the effect of the strike on the national economy. The N.U.R. had been offered every help in speedy discussion of a new claim and reference to the Railway Staff National Tribunal. A strike would do serious and perhaps lasting harm to the railway industry itself at a time when plans for the reconstruction and revival of the industry were coming to maturity.

Court of Inquiry

On December 23, Sir Walter Monckton, Minister of Labour, was involved in a day of urgent negotiations in an endeavour to avert a strike. Following talks with the Chairman of the B.T.C., he met leaders of the N.U.R. The union asked that the Commission should continue negotiations without taking account of the cost involved and that the union should be given prior assurance that its demands would substantially be met. These demands were conveyed to the Commission by the Minister, but the Commission rejected them. Further talks then ensued between the Minister and the union leaders, at the end of which Sir Walter Monckton announced that he would set up a court of inquiry to investigate the causes and circumstances of the dispute.

N.U.R. and Strike Action

The N.U.R. executive met on December 28 to decide whether they should participate in the court of inquiry, and later they announced that they would be prepared to do so but that they would not call off the threat of strike action. Arrangements were accordingly made for the court to have a preliminary meeting on December 29 and for it to hear evidence from the parties to the dispute on December 30. The court consists of Sir John Cameron, Dean of the Faculty of Advocates, who is Chairman; Sir Colin S. Anderson, a vice-president of the British Employers' Confederation, and Mr. Harry Douglass, general secretary of the Iron & Steel Trades Confederation.

Statement by Sir Walter Monckton

A statement issued by the Minister of Labour setting up the court of inquiry said:—

"The Minister of Labour has had separate discussions with the Chairman of the B.T.C. and with the negotiating committee of the N.U.R. The Chairman of the Commission confirmed the Commission view that the claim of the N.U.R. should be referred to the Railway Staff National Tribunal on its merits.

"The Minister asked the N.U.R. representatives to state their reasons for refusing to put their claim to the Tribunal. The union representatives replied that they did not consider that their case would be satisfactorily dealt with in this way.

Financial Circumstances of B.T.C.

"They further stated that they could only agree to resume negotiations with the Commission if the Commission were prepared to discuss their claim without regard to the limitation placed on the Commission by their financial circumstances and with the prior assurance that their claim would be substantially met.

"The Minister said that in the circumstances there was no room for conciliation on his part.

"As he was bound to ensure that the full facts were made known to Parliament and to the public, he had decided to set up a court of inquiry to investigate the causes and circumstances of the dispute.

"The court would meet without delay, and he hoped and expected that the union would co-operate with the court in their inquiries and meanwhile would suspend strike action."

Contracts & Tenders

Brown, Boveri A.G., of Baden, Switzerland, has received from the Comision Federal de Electricidad, Mexico, an order for two mobile 6,200-kW gas-turbine-electric generating plants. Each set is mounted on two eight-axle railway vehicles and the complete mechanical portions are being made by the Swiss Locomotive & Machine Works, Winterthur.

British Railways, Eastern Region, have placed the undermentioned contracts:—

Rotinoff Construction Limited, London, S.W.1: additional sidings at Thames Haven

Tersons Limited, London, N.3: maintenance of permanent way in the Ipswich district

Matthew T. Shaw & Co. Ltd., London, E.14: supply, fabrication and erection of steelwork for new Wagon Repair Shop at Temple Mills Marshalling Yard

Holmpress Piles Limited, Hull: preparation of site and construction of foundation piles for diesel maintenance depot, Lincoln

Wright, Anderson & Co. Ltd., Gateshead, 8: supply, delivery and erection of structural steelwork for one portal-framed building and one maintenance platform for diesel maintenance depot, Lincoln

British Railways, London Midland Region, have placed the following contracts:—

The Demolition & Construction Co. Ltd., London, S.W.1.; renewal of roof coverings, stage 1, general building work, Chester General Station

Edward Wood & Sons Ltd., Derby; accommodation for outdoor machinery workshops and stores, Derby

Henry Tattersall Ltd., Spotland Bridge, Rochdale, Lancs., for heating in the Road Motor workshops at Ardwick East, Manchester

Chas. Booth & Son (Contractors) Ltd., London, W.C.1.: temporary accommodation on the departure side of Euston Station in connection with improvements

John Wilson & Sons (Contractors) Ltd., Birmingham 21: reconstruction of Bridge No. 36, between Rugby and Leamington

The Special Register Information Service, Export Services Branch, Board of Trade, reports a call for tenders by the South African Railways for:—

300 bogie goods guards vans, 3-ft. 6-in. gauge, and components comprising: bogies, automatic couplers, drawgear, vacuum cylinders, wheels and axles, springs, bearings, and axleboxes.

The issuing authority is the Stores Department, South African Railways, Park Chambers, Rissik Street, Johannesburg, from whom copies of the tender documents may be obtained on a deposit of £50 plus £50 per set of drawings for the initial supply and £25 per set of additional copies. Tenders close at 9 a.m. on January 27.

A copy of the tender documents No. B.8723 may be inspected by appointment at the Office of the High Commissioner for the Union of South Africa, South Africa House, Trafalgar Square, London, W.C.2.

The Special Register Circular GEN/1268 B of August 5 (Export Services Branch, Board of Trade), informed subscribers of the introduction of an inspection fee to be paid by firms who wished to be admitted to the list of approved suppliers to the Egyptian Republic Railways (see our August 13 issue).

The following additional information has now been received about this inspection fee from the British Embassy in Cairo:—

XUM

(1) A fee of £E.100 (£E.1 0s. 6d. = £1 sterling) will be charged to firms whose products and work are inspected before their names are placed on the list of approved suppliers

(2) This fee will not be charged to firms already on the list

(3) Once paid the fee entitles a firm to remain on the approved list for an indefinite period

(4) A single fee is applicable to all the work, however widely separated, and to all the products, however diverse, of any one manufacturer, i.e., it is charged on the name

(5) There is now no restriction on the number of approved suppliers; previously the approved list was limited in number

(6) The E.R.R. buys quite a number of articles which can be supplied by firms not on the approved list

United Kingdom firms are reminded that application forms to be included on the list of approved suppliers are obtainable gratis on demand at the following addresses:—

The General Manager, E.R.R., Cairo Station
The Inspector General, Mechanical Department, Saptieh, Cairo

Application forms duly filled in and furnished with fiscal stamps value 50 milliemes should be addressed to the General Manager, E.R.R. The latest date for the submission of applications from the firms who wish to be included on the list of approved suppliers is January 1, 1955.

Notes and News

Vacancy for Draughtsman.—A draughtsman is required for work on tooling, research and general development at a rubber engineering factory. See Official Notices on page 756.

Workshop Supervisor (Boilermaker) Required.—Applications are invited for the post of workshop supervisor (boilermaker) required by the railway department, Gold Coast Local Civil Service, for two tours of 15 to 18 months each. See Official Notices on page 756.

Institution of Locomotive Engineers.—A meeting will be held by the Institution of Locomotive Engineers at the Institution of Mechanical Engineers, 1, Birdcage Walk, London, S.W.1, on Wednesday, January 12, 1955, at 5.30 p.m., at which a paper will be delivered by Mr. G. V. Davy on "Recent trends in electric locomotives."

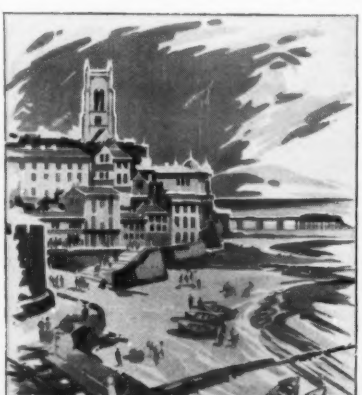
Institute of Transport, Northern Ireland Section.—The monthly meeting of the Northern Ireland Section of the Institute of Transport was held in Belfast on December 16, J. Mackle, Chairman, presiding. Lt.-Colonel Frank Bustard, Managing Director, Continental Line Transport Ferry Service, London, addressed the meeting on the subject of sea transport, with special application to cross-Channel ferry services.

C.N.R. Bonds Issue.—At the end of November, Mr. Donald Gordon, Chairman & President, Canadian National Railways, announced a new issue of $250,000,000 2¼ per cent bonds of the Canadian National Railway Company, to mature in eight years one and one-half months. The bonds are being offered at 99 per cent to yield 2·89 per cent to maturity. The issue is guaranteed unconditionally by the Government of Canada as to both principal and interest. The bonds will be dated December 15, 1954, and mature on February 1, 1963, subject to redemption at the option of the company on or after February 1, 1961. The issue was to be offered immediately to the public through investment dealers and banks. Mr. Gordon stated that the cash proceeds would be used by the Canadian National Railways to repay temporary interest-bearing capital advances from the government and for capital expenditure of the company.

Channel Steamer in Collision.—The cross-Channel steamer *Côte d'Azur*, with some 100 British passengers aboard, hit the jetty of Calais harbour on December 19 while entering the port. Lifeboats and tugs hurried to the aid of the steamer, which was drifting in the sea after the collision. Some of the lights on the jetty were carried away by the force of the collision, and severe damage was done to the jetty structure. The 4,037-ton *Côte d'Azur* is owned by the French National Railways and is one of the largest vessels in the cross-Channel service. It works in conjunction with the services operated by British Railways vessels.

Great Western of Brazil Railway Company.—The report of the liquidators of the Great Western of Brazil Railway Company for the year ended October 31, 1954, states that only slight progress in settling lawsuits and claims in Brazil has been made. Representatives in that country continue to settle out of Court whenever possible, and also press the settlement of claims in the Courts on every suitable occasion. During October representatives in Brazil collected some £4,000, subsequently received in London. As indicated in the last report, until all claims against company have been disposed of it will not be possible to make any further distribution to stockholders.

New Eastern Region Posters.—British Railways Eastern Region, have produced three new posters, to be exhibited during 1955.



One of three new posters commissioned by the Eastern Region

They are "Continental Services via Harwich," by the Dutch artist, Huveneers; "Norfolk Broads" by Gordon Burrows, who has combined real photographs with design to advertise holidays on the Broads; and "Cromer," by Kenneth Steel, reproduced in the accompanying illustration. These posters were all commissioned by the Public Relations & Publicity Officer of the Eastern Region.

Freight Traffic in the U.S.S.R.—In 1953, the Russian Railways carried approximately 783,000 million *tonne*-km. of freight traffic in comparison with 732,000 million in 1952 and 600,000 million in 1950. Rail transport thus accounted in 1953 for approximately 85 per cent of the total movement of freight in Russia compared with 6·5 per cent by inland waterway, 5 per cent by sea and 3·5 per cent by road.

Tecalemit Limited.—The board of Tecalemit Limited has proposed a final dividend of 9 per cent, making 12 per cent for the year to July 31. This is the same as for 1952-53. Group profits were £108,110 (£149,741) after taxation of £142,250 (£154,875), and special credits of the equalisation account £10,000 (£7,000). There was an additional credit of £10,000 (£25,000) in respect of over provision of tax in respect of earlier years.

Northern Aluminium Co. Ltd.—The Birmingham Area Sales Office of the Northern Aluminium Co. Ltd. has removed to new and larger offices at 14, Bennetts Hill, Birmingham, 2. From this new address the office will continue, under the managership of Mr. G. A. Vernon, to serve the Midland counties for all forms of Noral aluminium and aluminium alloy materials. The telephone number, Midland 5236, and telegraphic address, Noralumin Birmingham, remain unchanged.

Thos. W. Ward Limited: Final Dividend.—The interim dividend paid by Thos. W. Ward Limited on the ordinary shares on March 31, 1954, was on the then capital of £1,100,000 and at the rate of 5 per cent per annum. In terms of the increased capital of £2,200,000 this was equivalent to 2½ per cent less tax. The directors are to recommend payment of a final dividend of 10 per cent on the increased ordinary share capital. Dividend warrants will be posted on November 19, the date of the annual general meeting. Dividends are in respect of the year ended June 30, 1954. For the previous year the dividend was 20 per cent, plus an anniversary bonus of 2½ per cent tax free. The group net profit of £788,490 (after tax of £1,024,699) compares with £811,737 (tax £1,027,342) last year. General reserve receives £341,116 (£300,000) and £459,563 (£471,690) is carried forward.

Nickel Production in 1954.—The total nickel production in countries outside the Soviet bloc is estimated to be 390,000,000 lb. for 1954, according to figures quoted by Dr. John F. Thompson, Chairman of the board of directors of the International Nickel Co. of Canada, Ltd., recently. This is 50 per cent higher than in 1949 and 50,000,000 lb. more than in 1953. Stockpiling by governments absorbed much of the increase in world production in 1954 and caused increased diversions from industry, but the reduction of defence requirements resulted in a net increase in the supply of nickel for civilian applications. The price of refined nickel was increased by 4½ cents (U.S.A.) per lb. on

November 24 and new prices were announced for nickel and nickel alloys in the form of mill and foundry products produced at the plants of subsidiaries in the U.S.A. and U.K. Dr. Thompson estimated probable production in 1955 as 415,000,000 lb.

Turner & Newall Limited: Chairman's Statement.—In his statement issued with the report and accounts for the year ended September 30, 1954, Mr. W. W. F. Shephard, Chairman of Turner & Newall Limited, says that current earning capacity has not changed significantly in total, but experience at home has been better and overseas experience less favourable than a year before. Overseas difficulties continue without indications of a change from "buyers' market" conditions. The results of the current year's activities will depend largely on the fortunes of the home companies, and should be similar to those of the year under review. As suppliers to other industries, prosperity is contingent on a reasonable measure of prosperity in industry in general. Financial results were given in our issue of December 10.

Crabtree Electrical Industries Limited: Annual Meeting.—At the annual general meeting of Crabtree Electrical Industries Limited recently, Dr. H. Schofield, the Chairman, said that the past year had followed the anticipated pattern. From the early months of the year there had been a gradual acceleration in the rate of demand for the principal products of the company. The ordinary dividend had been increased, after 17 years, by 2½ per cent. Reserves had been built up over those years and the financial position was much stronger. The directors felt it only just in some circumstances that the shareholders should receive some increase. The current year's progress was satisfactory and the future could be faced with hope and confidence.

Escalators at the Bank.—At a recent meeting of the Court of Common Council, conditions in the tunnel connecting the Waterloo & City Railway Station with the surface at the Bank were described as "chaotic." Suggestions for improvements have been answered by the Southern Region of British Railways, which is responsible for the tunnel, by the statement that it would cost some £750,000 to install escalators at that point. Traffic is limited, in general, to weekday rush hours, and such expenditure would be difficult to justify. The matter is to be kept under review and when a suitable opportunity arises the provision of escalators will be included with other desirable but expensive schemes in a list of projects for development.

Seam Welding Stainless Steel Sheet.—A seam welder for joining stainless steel sheets 0·004 in. thick has been developed by the General Electric Co., Ltd. The machine joins the material with a series of overlapping spot welds each of one cycle, 1/50th second duration, each weld being accurately turned by an electronic circuit incorporating thyratron valves. Welds are initiated automatically by a multivibration circuit in which two gas-filled triode valves are so coupled that they always fire in synchronism with the supply mains frequency. The sheets are placed on a large work table built around the welder head. The top electrode, a chrome copper disc, and the upper of two pairs of guide rollers are lowered into working position, and a rotary switch bring the machine into action, and the seam is made at the rate of 2 ft. a minute. A feature is the use of a continuous wire electrode. Before being seamed the stainless steel sheets are tacked together with spot welds spaced ½ in. apart for which a G.E.C. 4 kVA spot welder is used. The spot welder can be used for welding shaped components.

Associated Electrical Industries Limited Offer.—The terms of the Associated Electrical Industries Limited, offer for the ordinary stock of Siemens Bros. & Co. Ltd., are that seven £1 A.E.I. shares would be issued for every £10 of Siemens Bros. & Co. Ltd. stock held. The A.E.I. shares, which would be converted subsequently to ordinary stock, would not participate in any A.E.I. dividend for 1954. If the offer is accepted the board of Siemens Bros. & Co. Ltd. is expected to pay a 10 per cent dividend in respect of 1954. The directors of A.E.I. propose to recommend a final dividend of 10 per cent on the ordinary stock in respect of 1954. With the interim dividend already paid, this would make 14 per cent for the year.

Westinghouse Brake & Signal Co. Ltd.—A dividend of 18 per cent is recommended by the directors of Westinghouse Brake & Signal Co. Ltd. for the 53 weeks ended October 2, 1954. This compares with 16 per cent for the previous year. Group trading profits were £1,616,392 (£1,270,787) after depreciation of £265,327 (£204,534). Net profits amounted to £767,500 (£448,616) after tax of £811,922 (£763,048). Minority interests took £24,438 (£17,076) and £225,903 (£181,935) was retained by subsidiaries. To the £517,159 (£249,605) remaining was added income of earlier years and provisions no longer required of £10,620 (£102,905). Capital reserve for plant and equipment replacement received £185,000 (£70,000), general reserve £50,000 (nil), pensions reserve £15,000 (£10,000), research and development reserve £60,000 (nil). Last year £42,000 was written off the interest in a subsidiary. The balances carried forward were £243,218 and £228,468 respectively. The figures include results of Gresham Craven & Heatly (Holdings) Limited, from January 1, 1954.

Forthcoming Meetings

January 6 (*Thu.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas' Street, S.E.1, at 5.45 for 6 p.m. Film tour of English canals, Scotland and Ireland.

January 6 (*Thu.*).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Railway quiz—questions on railway operating and administration. Question master—Mr. H. G. Bowles.

January 6 (*Thu.*).—Institute of Transport, South Wales & Monmouthshire Section, at the South Wales Institute of Engineers, Cardiff, at 7.15. Paper on "Competition in transport," by Mr. Peter Wiles.

January 7 (*Mon.*).—The Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m. Paper on "The Birmingham & Derby Junction Railway," by Mr. C. R. Clinker.

January 7 (*Fri.*).—Locomotive Society of Scotland, at 302, Buchanan Street, Glasgow, C.2, at 7.15 for 7.30 p.m. Paper on "The locomotives of Dugald Drummond," by Mr. Montague Smith.

January 8 (*Sat.*).—Stephenson Locomotive Society, North Western Area, at the Manchester Geographical Society's Rooms, Deansgate, at 6.15 p.m. Talk: "North British curiosities," by Mr. C. Hamilton Ellis.

January 10 (*Mon.*).—Historical Model Railway Society, at 32, Russell Road, London, W.14, at 7 p.m. Talk on "Oddities of railway traction," by Mr. R. W. Kidner.

January 10 (*Mon.*).—Institute of Transport, at the Jarvis Hall, 66, Portland Place, London, W.1, at 5.45 p.m. Paper on "The economies of intensified use of railway operating and motive power resources," by Mr. H. H. Phillips.

Christmas Decorations at Paddington

The Lawn at Paddington, Western Region, in Christmas week

January 11 (*Tue.*).—South Wales & Monmouthshire Railways & Docks Lecture & Debating Society in the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. Paper on "The railway medical service," illustrated by lantern slides, by Dr. C. T. Newnham, Regional Medical Officer, British Railways, Western Region, Paddington.

January 12 (*Wed.*).—Institute of Traffic Administration, London Centre, at R.O.S.P.A. House, Hyde Park Corner, London, S.W.1, at 7.15 p.m. Paper on "Control and working of a large passenger station," by Mr. L. J. Cox.

January 12 (*Wed.*).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, London, S.W.1, at 5.30 p.m. Paper on "Recent trends in electric locomotives," by Mr. G. V. Davy.

January 12 (*Wed.*).—Institution of Railway Signal Engineers, at the Railway Institute, York, at 5.30 p.m. Paper on "Mechanical signalling developments," by Mr. G. G. F. Halliwell.

January 13 (*Thu.*).—Hull District Stationmasters' Discussion Group in the Anlaby Road Institute, at 7 p.m. Paper on "Leadership and management," by Mr. S. A. Finnis, Chief Docks Manager, Humber Ports.

January 15 (*Sat.*).—Railway & Canal Historical Society (first meeting), at the London Transport Executive Library, 55, Broadway, London, S.W.1, at 6 p.m. Paper on "The London and Greenwich Railway: the first railway in London," by Mr. H. A. Vallance.

January 15 (*Sat.*).—Stephenson Locomotive Society, Leeds Centre, at the Y.M.C.A., Albion Place, at 6.30 p.m. Paper on "Railroad experiences in Canada and U.S.A.," by Viscount Garnock.

January 15 (*Sat.*).—Stephenson Locomotive Society, Sheffield Centre, at the Y.M.C.A., Fargate, at 6.30 p.m. Lecture on "Locomotive performance," by Dr. W. A. Tuplin.

January 17 (*Mon.*).—Stephenson Locomotive Society, Midland Area, at 71, Edmund Street, Birmingham, at 7.15 p.m. Talk on "Birmingham & Derby Junction Railway," by Mr. C. R. Clinker.

January 17 (*Mon.*).—Institute of Transport, Metropolitan Section, at 80, Portland Place, London, W.1, at 5.30 for 6 p.m. Paper on "Transport distribution by the General Post Office," by Mr. L. J. Taylor.

Railway Stock Market

The exceptional activity and strength in stock markets, which during a period of months of rising values took many industrial shares up to new high record levels, assures that 1954 will go down as the most spectacular in Stock Exchange history. In a large measure it was a year of adjustment involving an upward trend in dividends and also in issued capitals by free scrip issues. When the Labour Government was in power higher dividends and free scrip issues were frowned on, with the result that an artificial situation developed. Shareholders generally were getting an unfairly low return on their money, and at the same time the large part of annual profits put to reserve meant that resources used by many companies to earn profits were much in excess of the actual share capital in issue. In the past year the process of raising dividends and increasing issued capitals by scrip issues has made widespread progress. Nevertheless, few companies have followed an unsound policy. A very large part of annual net profits has been added to reserves. Many industrial shares are closing the year at around their highest levels touched in the past twelve months. This is due to hopes that further dividend increases may be in prospect next year, partly because financial results will reflect the end of E.P.L.

The outstanding strength of industrial shares in 1954 overshadowed most other sections of markets. British Funds, after moving ahead, came back recently because of talk of a possible increase in the bank rate next year. War Loan 3½ per cent, which is 87⅞ at the time of writing, has had extreme prices in 1954 of 92 and 84½.

During the year there was only moderate interest in railway stocks, most of which continued to fluctuate somewhat sharply from week to week. Canadian Pacifics were exceptionally good, however, and are $58½ at the time of writing, which is the highest so far recorded in 1954. The year's lowest was $39. Canadian Pacific 4 per cent preference stock is now £73¼ compared with the year's extremes of £77½ and £65. Highest and lowest for the 4 per cent debentures have been £93¼ and £87. Current price is £88¼.

There have been sharp fluctuations during the year in White Pass, which fell to $24 at one time, but are $35 at the time of writing, compared with the highest of $39 touched in the year.

A revival of interest in Midland of Western Australia stock brought the price up from 18 to 28½, but there has since been a reaction to 22. Emu Bay 5 per cent irredeemable debentures, which were only 10 at one time in the year, rose to 46 and are now 44½. Elsewhere, Nyasaland Railways 3½ per cent debentures have had extremes during the year of 80½ and 79¼ are now 79½. The shares are 5s. 9d. compared with highest and lowest during the year of 6s. 4½d. and 3s. 4½d. Among Indian stocks, Barsi have been up to 127½ during the year and are now down to 80.

Antofagasta stocks have been active, and a few weeks ago came into strong demand on hopes that a distribution from a subsidiary would enable payment of arrears of preference dividend to be accelerated. Extreme prices for the ordinary stocks during the year have been 7⅞ and 11¼; the current price is 10½. Extremes for the preference stock were 61 and 39 and the current price is 54½, while during the year the 5 per cent (Bolivia) debentures have moved between 64½ and 75 and are now 76½.

Mexican Central "A" debentures are now 75½, which compares with extremes during the year of 84 and 70. United of Havana second income stock has been up to 43½ during the year and down to 35½, and is now 36 per cent. Current price of 5½ for the consolidated stock compares with extremes during the year of 6¾ and 5.

Nitrate Rails shares now 18s. 9d. are at the year's lowest; they touched 21s. 3d. earlier in the year. Extremes for Taltal shares have been 15s. 3d. and 12s. 6d.; current price is 14s. 6d.

Chilian Northern first debentures are now 33 and the year's highest and lowest prices were 34 and 25. Costa Rica ordinary stock is now 12½; year's extremes were 12½ and 7½. The first debentures of the last named company have been up to 69½ and down to 59 and are now 67½, while the second debentures are now 58½, which compares with extremes of 59 and 43½.

The following give current prices of a number of stocks and the year's extremes. Guayaquil & Quito first debentures 60 (60½ and 42). Paraguay Central prior debentures 20½ (21 and 15). International of Central America gold bonds 165½ (161 and 116). San Paulo units, now 3s. 3d., have been up to 4s. and down to 2s. 4½d. during the year. There was a certain amount of speculation in old Russian railway bonds. Russian South Eastern, for instance, have had extreme levels during the year of 37s. 6d. and 12s. 6d. and are now quoted nominally at 25s.

Shares of locomotive builders and engineers were active in the past year, and moved fairly closely with the general trend of markets, though a few weeks ago they were stimulated by a special factor—more general recognition of the large sums which will have to be spent in future on modernising the railways. The following give current prices of a number of well-known shares and highest and lowest levels in the year. Beyer Peacock 48s. (50s. and 28s. 9d.). Charles Roberts 5s. shares 9s. 7½d. (11s. 10½d. and 8s. 6d.). Birmingham Carriage 36s. 3d. (36s. 3d. and 25s. 6d.). Hurst Nelson 39s. 3d. (43s. 3d. and 37s. 6d.). Vulcan Foundry 35s. (35s. and 21s. 6d.). North British Locomotive 19s. 6d. (20s. and 12s. 10½d.). Gloucester Wagon 10s. shares 19s. 3d. (21s. 4½d. and 15s. 7½d.). Wagon Repairs 5s. shares are now 16s. 7½d., which compares with the year's extremes of 18s. 6d. and 8s. 6d. G. D. Peters are currently quoted at 26s. 3d. compared with extremes during the year of 27s. and 21s.

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

CLERK required for Transport Department, South London, experienced in railway rates and charges and export procedure. Good geographical knowledge essential. Age up to 30 years. Box 443, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

DRAUGHTSMAN required for interesting work on Tooling, research and general development at a rubber engineering factory. Canteen facilities also Pension Scheme. Apply, stating age, experience and training to Andre Rubber Co., Ltd., Kingston-by-Pass, Tolworth, Surbiton, Surrey.

SOUTHERN RAILWAY of Peru FULLY QUALIFIED SENIOR ASSISTANT ENGINEER speaking fluent Spanish, also an ENGINEERING DRAUGHTSMAN with drawing office experience of railway and civil engineering and some outside experience, a knowledge of Spanish an advantage. Apply: The Secretary, Peruvian Corporation Limited, 144, Leadenhall Street, London, E.C.3.

WORKSHOP SUPERVISOR (BOILERMAKER) required by the RAILWAY DEPARTMENT, GOLD COAST LOCAL CIVIL SERVICE for two tours of 15/18 months each. Consolidated salary in scale £990 rising to £1,230 a year. Gratuity at the rate of £100/£150 a year. Outfit allowance £60. Free passage. Liberal leave on full salary. Candidates must have served an apprenticeship in a Railway Boilershop with at least 3 years' subsequent experience, and be conversant with the use of hydraulic and pneumatic tools. A knowledge of oxy-acetylene cutting and welding and electric welding would be an advantage. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/40578/RA.

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